



# BLACK ROCK TURNPIKE SAFETY STUDY

## FINAL REPORT

MAY 2019



# Black Rock Turnpike Safety Study

## Final Report

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# 1. EXECUTIVE SUMMARY

Black Rock Turnpike (Route 58) in Fairfield, CT is a multi-lane, high-conflict arterial road that provides north-south connectivity for motorists between Route 15 and Route 1/I-95. The road also serves a major regional shopping district served by transit and used by bicyclists and pedestrians. Three recent fatalities have prompted local officials to consider engineering solutions for improving safety for all users and balancing the needs of multiple modes.

The recommended concept plan for Black Rock Turnpike strives to address as many safety deficiencies as possible while still offering adequate capacity for cars and trucks. Given the regional commercial status of the corridor, the Town of Fairfield stressed the importance of not further exacerbating current levels of congestion. While some congestion, especially during peak shopping days, is inevitable, fewer crashes will reduce much of the unpredictable delay that results when the corridor is impacted by a crash. In totality, the corridor improvement plan can be best summed up as a strategic set of safety countermeasures that work in concert to reduce vehicle speed, minimize unsafe driver behavior, and offer pedestrians better protection and visibility in the public right-of-way.

The countermeasures in the Recommended Corridor Plan include:

- Lane reductions
- Modern roundabouts
- Enhanced pedestrian crossings
- Intersection modifications
- Access management
- Improved parking lot circulation

Once the project is initiated and a funding source identified, the remaining steps to implement an improvement will involve detailed design and construction. Based on the complexity of a project, an initial Preliminary Engineering phase may be required to conduct a more detailed engineering study and refine the concept plans and project scope. A preliminary engineering study can help establish the potential impacts to environmental and natural resources, identify potential property and utility impacts, and help refine the expected costs in current dollars rather than forecasting based on estimates reported in this Study, which are provided in current, 2018 dollars.

Once Preliminary Engineering is complete and the decision is made to move forward with a project, final design will take place to add detail to the plan, conduct a right of way acquisition process, address utility conflicts and possible relocations, and develop construction documentation to facilitate bidding and construction of the improvements. Generally, projects that are identified as having a low level of complexity can be designed within 12-18 months from initiation of the project by the Towns. As complexity grows, so does the timeframe required to design improvements. Design phases can potentially last three years or more for highly complex projects.

Following the completion of the design phase, projects can begin the construction phase. The steps involved in a publicly funded project include advertisement for bids to contractors, collecting bids on the work and awarding the contract, and finally conducting the construction to build the improvement. Utility relocations typically take place during construction, but in some instances a utility company may relocate facilities in advance of a project taking place once a utility agreement is in place. Generally, smaller projects are completed within one construction season between March and November. Larger projects can span several construction seasons depending on the complexity of the work, the construction staging and phasing needed to facilitate the maintenance and protection of

traffic operations during construction, and possibly the availability of funding. Projects identified as having moderate complexity can be expected to take up to two construction seasons and highly complex projects could take more than two construction seasons to build.

To assist in the budgeting of funding for the improvements, opinions of preliminary probable construction costs (OPC) were developed for the Recommended Corridor Concept. The preliminary costs have been estimated following the guidelines published by the CTDOT and are presented in 2019 dollars. Project costs may require inflation factors looking out into the future to determine actual funding needs for funding programming. The “Preliminary Cost Estimating Guidelines” provide unit costs and percentage-based lump sum costs to facilitate the estimation of project costs at the Preliminary Engineering level of project development. The approximate project costs presented in this Study are limited to the construction item costs and exclude costs related to rights of way actions and environmental remediation, and engineering. The estimates include contingency (25%) and incidentals (25%) in the total opinion of probable costs.

As shown in Table ES-1 below, the improvements outlined in the Recommended Corridor Concept are estimated to cost approximately \$23.1 million to construct. While the Recommended Corridor Plan would provide optimum safety benefits, it is a complex project that could take many years to complete. For this reason, a Near-Term Plan was developed to include improvements to Black Rock Turnpike that would yield a high safety benefit at a significantly lower cost. This plan could also be an early phase implementation of a series of improvements in the Recommended Corridor Plan. The estimated cost for the Near-term Plan was estimated at approximately \$10.1 million.

**TABLE ES-1**

Opinion of Probable Construction Cost Summary – Recommended Corridor Concept

| Intersection |                                                                                  | Opinion of Probable Construction Cost |
|--------------|----------------------------------------------------------------------------------|---------------------------------------|
| 1            | Black Rock Turnpike at Tahmore Drive & Old Black Rock Turnpike                   | \$360,000                             |
| 2            | Black Rock Turnpike at Samp Mortar Drive                                         | \$2,273,000                           |
| 3            | Black Rock Turnpike at Brookside Drive and Fairfield Woods Road                  | \$2,288,000                           |
| 4            | Black Rock Turnpike at Lake Hills & Black Rock Shopping Centers                  | \$3,817,000                           |
| 5            | Black Rock Turnpike at Route 135 (Stillson Road) & Stillson Road                 | \$2,327,000                           |
| 6            | Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza                  | \$1,139,000                           |
| 7            | Black Rock Turnpike at Katona Drive & Katona Drive Extension                     | \$3,523,000                           |
| 8            | Black Rock Turnpike at Burroughs Road                                            | \$2,675,000                           |
| 9            | Black Rock Turnpike at Tunxis Hill Cutoff, Route 732, Mortiz Pl. & Whitewood Rd. | \$4,746,000                           |
| <b>Total</b> |                                                                                  | <b>\$23,148,000</b>                   |

Table ES-2 and the Figures ES-1 to ES-6 present the recommended corridor concept plan for Black Rock Turnpike in its entirety. The plan is drawn to scale and reflects a level of accuracy consistent with planning/pre-engineering studies.





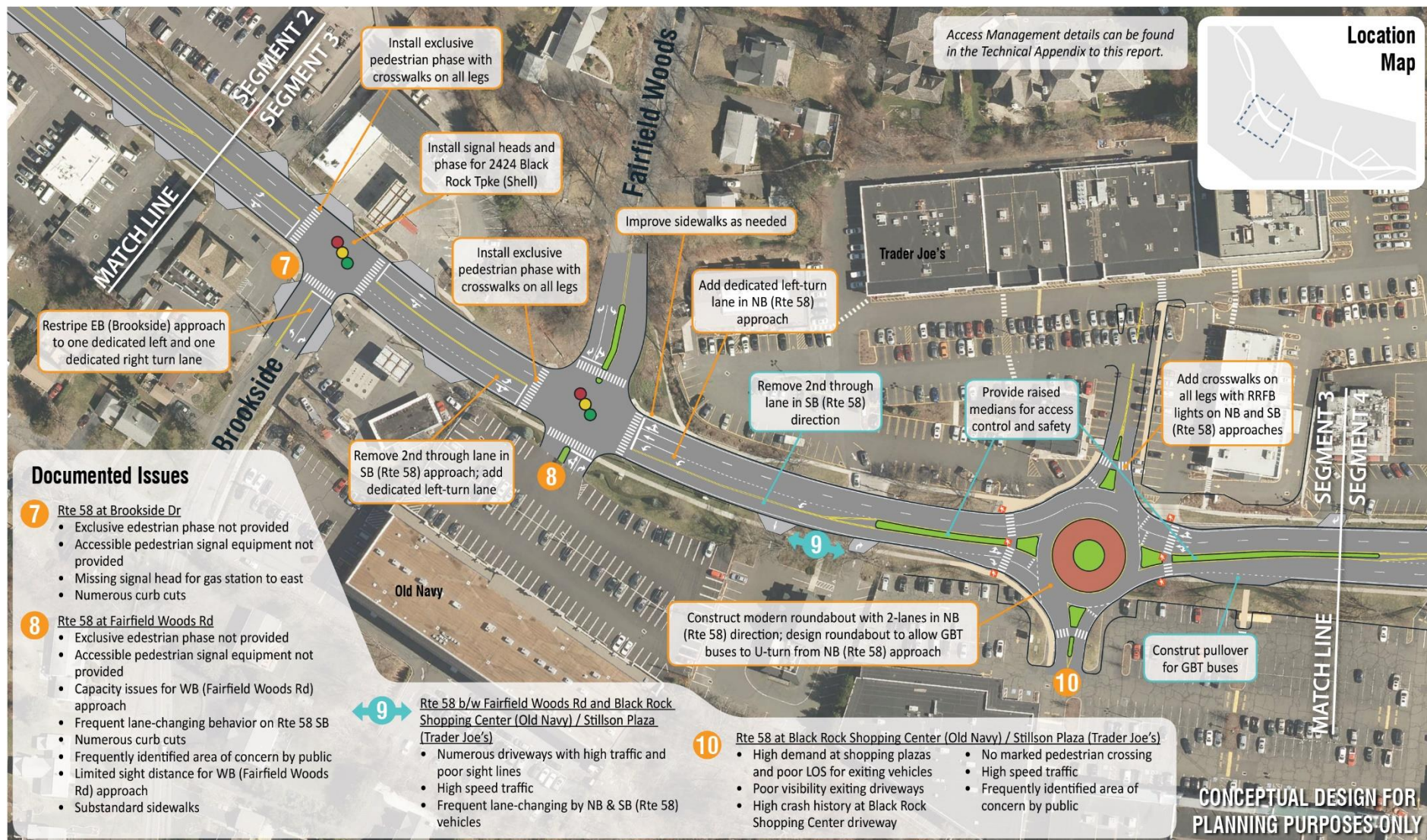
Figures ES-1 to ES-6: Recommended Concept Plan



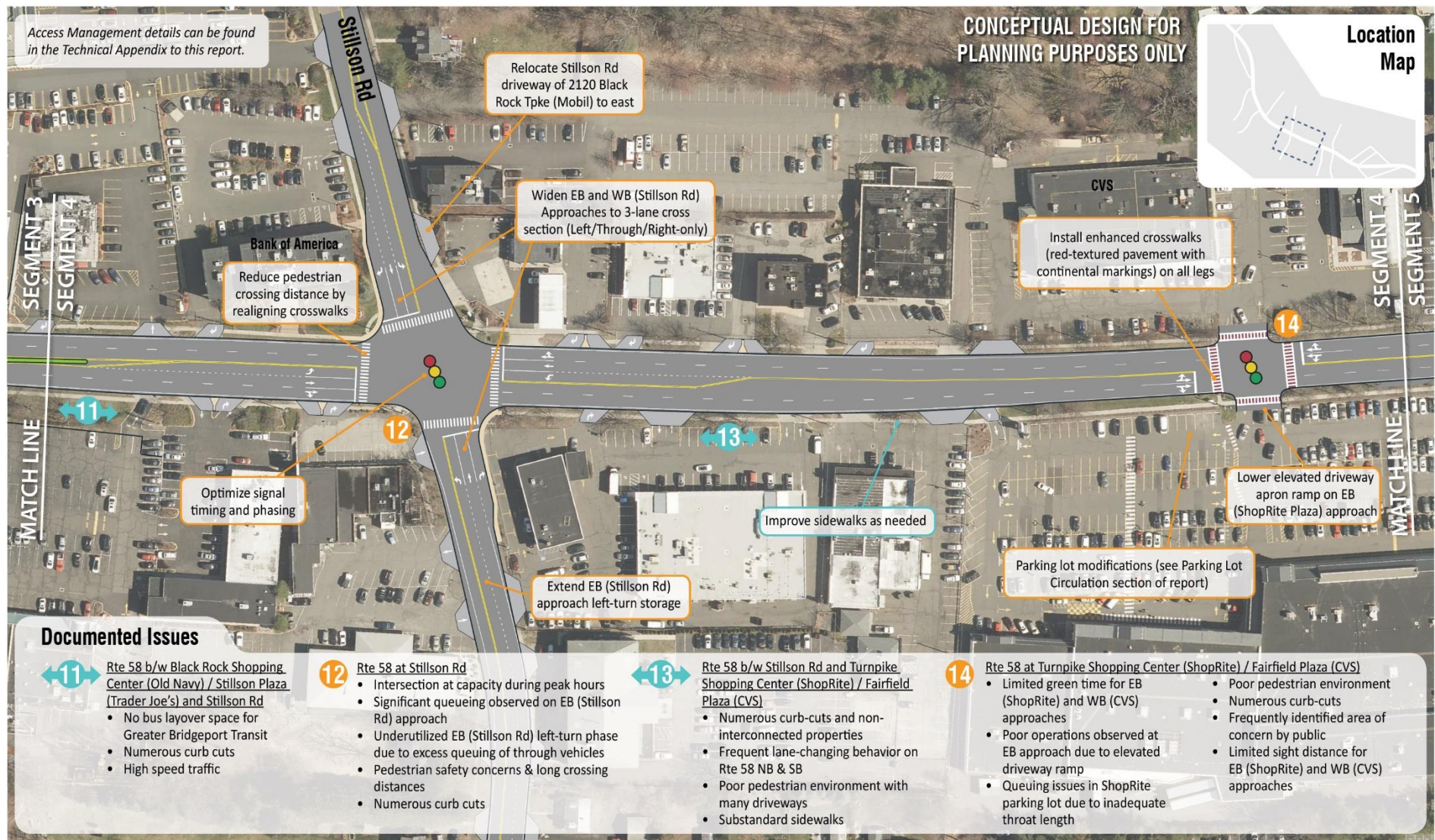


Figures ES-1 to ES-6: Recommended Concept Plan







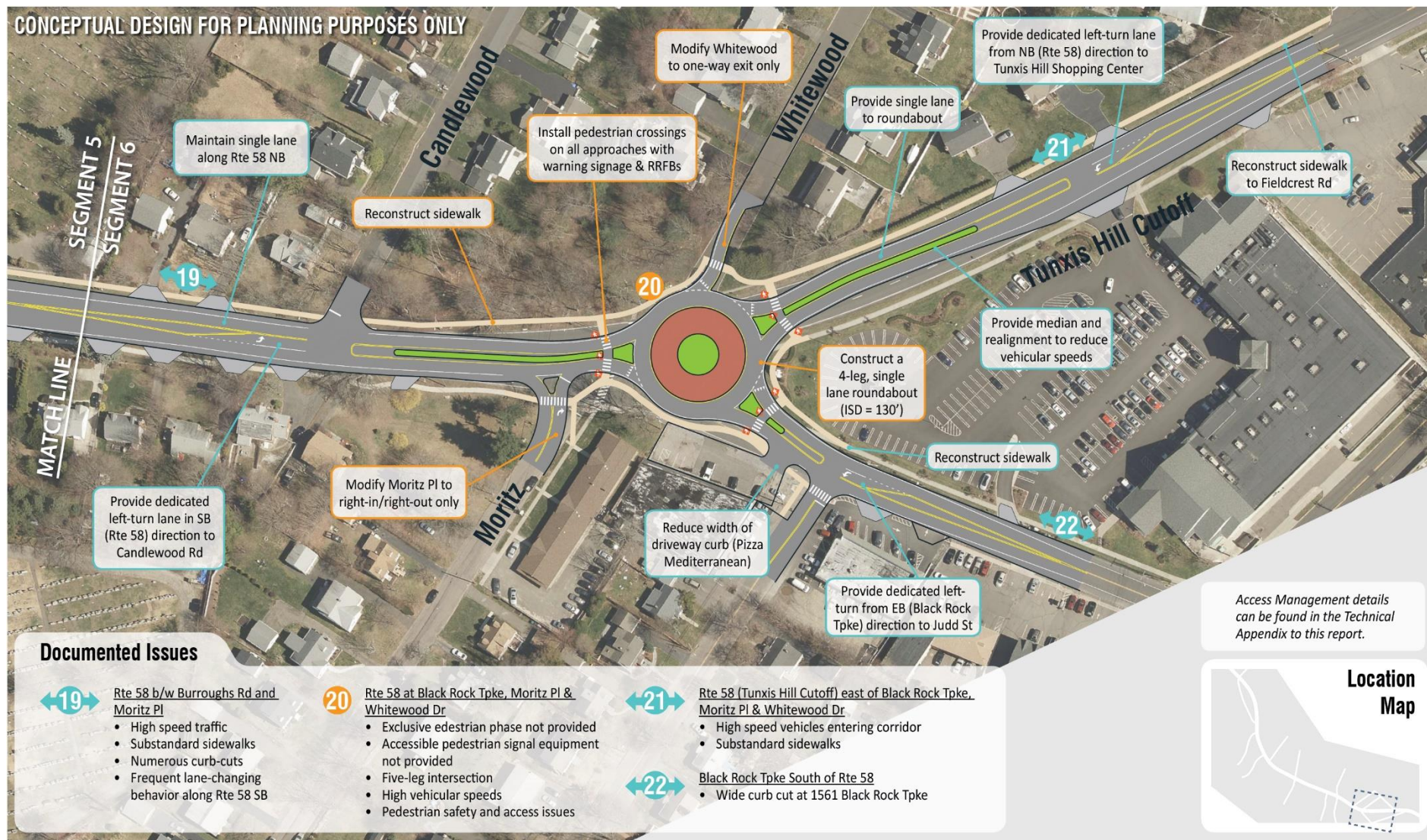






Figures ES-1 to ES-6: Recommended Concept Plan





**Figures ES-1 to ES-6: Recommended Concept Plan**



## 2. INTRODUCTION

The *Black Rock Turnpike Safety Study* was prepared by a project team that consists of several organizations. The MetroCOG managed the project in coordination with the Town of Fairfield. The consultant team was led by Fitzgerald & Halliday, Inc. (FHI) with assistance from Tighe & Bond and CT Counts, LLC. In addition, key stakeholders and the public were an integral part of the project team and was actively involved throughout various study efforts. The total budget for the study was \$375,000 and was fully funded by the State of Connecticut's Local Transportation Capital Improvement Program (LOTICIP).

### Purpose and Study Area

Black Rock Turnpike is a multi-lane, high-conflict arterial road that is frequently used by transit, bicyclists and pedestrians. Three recent fatalities have prompted local officials to look to redesign this road to balance the needs of multiple modes.

#### Purpose

The purpose of the *Black Rock Turnpike Safety Study (Black Rock Study)* was to explore alternatives and strategies that will enhance safety for all users along the corridor, including pedestrians, bicyclists, transit users, and motorists.

This comprehensive transportation planning study assessed Black Rock Turnpike's operational and safety characteristics and developed conceptual solutions that could be implemented over near-term and longer-term timeframes. Robust public engagement guided the study process. Key objectives of the *Black Rock Turnpike Safety Study (Black Rock Study)* as outlined in MetroCOG's Request For Qualifications (RFQ) included:

- Assessment of lane layout and configuration as well as other intersection improvements,
- Analysis of traffic signal coordination throughout the corridor,
- Recommendations for bicycle, pedestrian and transit amenity improvements in the study area; including adjacent residential neighborhoods,
- Analysis of the role and use of local roads intersecting Black Rock Turnpike and evaluate all local road approaches,
- Evaluation of road widths and cross-sections,
- Analysis of the potential elimination or reduction of curb cuts throughout the study area,
- Assessment of future development in the corridor,
- Integration of current and future GBT bus routes along Black Rock Turnpike,
- Identification of the need and location of additional crosswalks in the study area, and
- Feasibility determination of bike lane installation throughout the corridor.

#### Study Area

The Black Rock Turnpike is a major arterial that serves one of Fairfield's largest business and commercial districts. As a state highway (Route 58), the Turnpike is a main north/south corridor in Fairfield. It provides a key connection for residential neighborhoods to retailers and services as well as a vital link between U.S. Route 1 and Interstate 95 in the south and the Merritt Parkway (Route 15) in the north. Approximately 20,000 vehicles travel along the turnpike every day and this volume of traffic combined with the road width, traffic speed, and frequent driveways have caused the Turnpike to be identified as a trouble spot by The Town of Fairfield.





**Figure 1: Town of Fairfield Transportation Network**

The study area for this project focuses on the area between the Black Rock Turnpike intersection with Tahmore Drive and Old Black Rock Turnpike to the north and Tunxis Hill Road to the south. Along this segment, the road widens from a single lane in each direction to a multi-lane arterial with frequent access to adjacent land uses.

In response to public input, the project team also performed a cursory analysis of the segment of Black Rock Turnpike directly north of the study area from the intersection with Tahmore Drive to the Merritt Parkway. While this section was not part of the predetermined study area, the public expressed concern about safety issues along this part of the roadway, which primarily serves residential properties and provides access to the Merritt Parkway. It was determined that much of the safety-related issues on this segment are associated with the highway interchange, and as such, should be evaluated independently from this study.



**Figure 2: Black Rock Turnpike Study Area**

While this study is primarily focused on the transportation aspects of this corridor, the plan recognizes that the transportation network plays a key role in establishing the character of a community and the quality of life that is enjoyed by its residents and visitors.

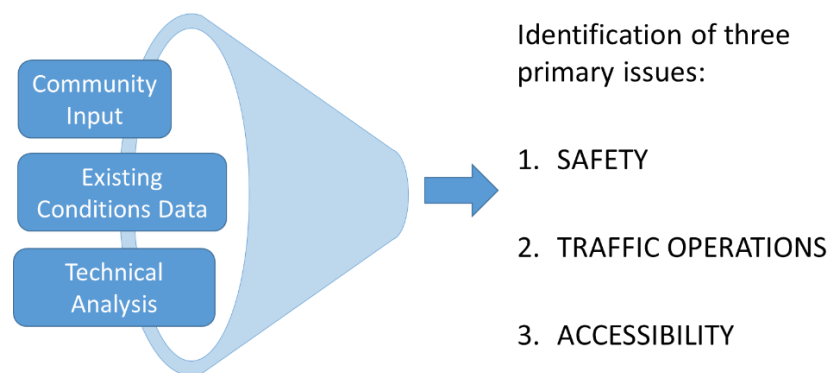
## Study Process

The overall approach for the *Black Rock Study* was to take a broad perspective on the role and function of Black Rock Turnpike, and through a contemporary planning process, apply innovative engineering solutions to address safety, mobility, and accessibility along the corridor.

First and foremost, the study was guided by an inclusive public engagement process. The study team listened to concerns from the public, as well as their aspirations for the future of the corridor. This

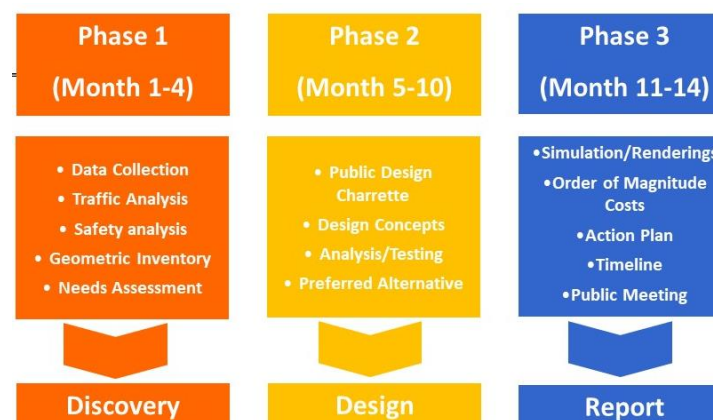


was coupled with an innovative data collection and analysis methodology to better understand and communicate the corridor's complexities. This approach ensured that the Study Team was focused on solutions that meet the needs and desires of the community.



**Figure 3: Black Rock Turnpike Safety Study Approach**

The study included three main phases, generally described as Phase I: Discover, Phase II: Design, and Phase III: Reporting. This approach provided a simple framework for identifying the issues along Black Rock Turnpike, evaluating potential solutions, and creating a plan for the Town of Fairfield to use in updating the road over time.



**Figure 4: Black Rock Turnpike Safety Study Schedule**

## 3. EXISTING CONDITIONS

### Major Findings

A full analysis of existing and future transportation conditions on Black Rock Turnpike is presented in the Existing & Future Conditions Technical Memorandum. The following chapter reviews the major findings in that report.

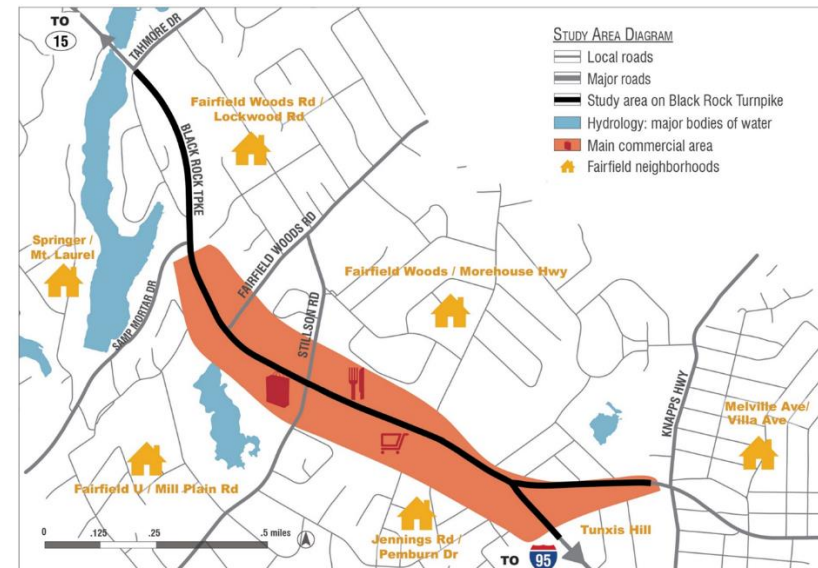
#### *Transportation Network Overview and Context*

The Black Rock Turnpike is designated as an urban minor arterial throughout the corridor study area. The major intersection in the corridor, the intersection of the Black Rock Turnpike (Route 58) and Stillson Road (Route 135) is centrally located in the study area. Stillson Road is designated as a minor arterial to the northeast and southwest of the study area. Furthermore, Route 58 is intersected by Route 732 also identified as a minor arterial.

Travel patterns throughout the corridor are heavily influenced by the proximity to two major highways - I-95 to the south and the Merritt Parkway (Route 15) to the north. This proximity makes the Black Rock Turnpike a common commuting route to regional employment destinations and nearby neighborhoods. Locally, the Black Rock Turnpike provides direct access to a major commercial district in the Town of Fairfield. This access is largely provided by numerous unsignalized curb cuts in the core of the corridor between Samp Mortar Drive and Burroughs Road to the south.

Contextually, the Black Rock Turnpike passes through several types of land-uses on its 1.7-mile extent included in this study. This includes dense residential neighborhoods to the south which form some of Fairfield's densest residential neighborhoods. Within these

neighborhoods are many neighborhood schools including the nearby McKinley Elementary school located near the southern end of the corridor. Furthermore, many other schools are near the Black Rock Turnpike including Fairfield Warde High School, Osborn Hill Elementary School, Holland Hill School, and Fairfield Woods Middle School.



**Figure 5: Black Rock Turnpike Land Use Context**

North of this southern neighborhood zone is the core commercial district defined by the borders of Burroughs Road to the south and Samp Mortar Drive to the north. Within this commercial zone are typical suburban commercial developments including both large scale multi-tenant commercial plazas as well as older, and smaller, individual commercial buildings. This historical growth and development of commercial area mean that curb cuts are numerous throughout this core area and cross property connections are infrequent. Off-street parking via surface lots is prevalent throughout



this corridor and is typically provided between the Turnpike and the front of buildings.

Lastly, the zone north of Samp Mortar Drive consists of suburban residential land uses. Houses include driveways with direct access to the turnpike with ample set back from the roadway. This residential context continues to the north and extends about 16 miles north to Bethel, CT.

### Road Conditions

The study area lane configuration varies between two-lanes to five-lanes. The north and south ends of the study area consist of two lanes of traffic, one in each direction, and the central portion has four lanes of traffic, with a fifth lane for left turns at the Route 135 (Stillson Road) intersection. Generally, Black Rock Turnpike has inconsistent shoulders ranging 1 foot to 10 feet wide, with wider shoulders at the north and south ends of the study corridor and narrower along the denser development in the center of the study area. Undersized shoulder widths of less than 4 feet challenges bicycle and pedestrian travel along the corridor.

Black Rock Turnpike is a road marked with numerous driveways. The number of driveways, or curb cuts, increases the number of potential conflicts, both vehicular and non-vehicular alike, while also contributing to congestion, confusion, and frustration for motorists as they attempt to find a break in traffic.

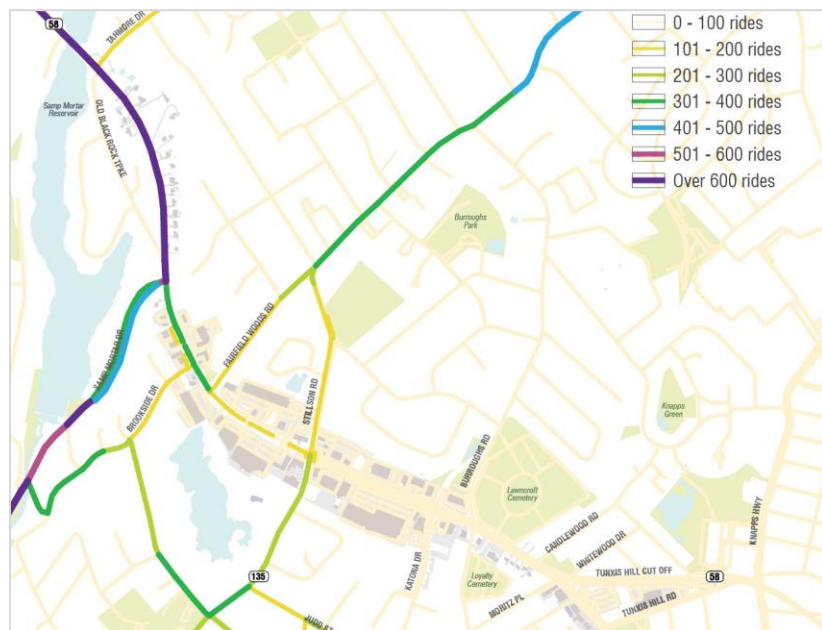


**Figure 6: Black Rock Turnpike Typical Conditions**

### Bicycle and Pedestrian Activity

Bicycling and pedestrian use along the corridor is relatively light when compared against the volume of vehicular traffic, but non-motorized activity is present and would likely be higher if conditions to improve the comfort and safety of those travel modes were made.

Bicycling data for the study area suggested that the area along the Turnpike north of Samp Mortar Drive is more suitable for bicyclists. South of Samp Mortar Drive, where the roadway's geometry and character abruptly changes, the bicycle use along the Turnpike significantly drops. It appears that bicyclist may be bypassing Black Rock Turnpike by utilizing Pansy Road and Judd Street.



**Figure 7: Bicycle Activity** (Source: Strava Data from November 1, 2014 through October 31, 2016)

While there is relatively low bicycle ridership along the Black Rock Turnpike, it is difficult to determine whether this is because bicyclists do not prefer to take this route or whether they do not take the route due to the lack of safe and/or comfortable facilities. It's possible that bicyclists would ride on this route if facilities existed to make it safer, especially because the Turnpike does provide a convenient and quick connection between many key destinations in town.

Pedestrian traffic across Black Rock Turnpike is mostly concentrated between Fairfield Woods Road and Judd Street, which is where the main commercial shopping opportunities are located. The intersection which received the highest amount of pedestrian traffic

was at Stillson Road, which is at a central point of the study area and provides access to numerous commercial businesses. Pedestrian activity during the PM hours on the weekdays is typically higher than morning hours since commercial activity increases as the day progresses. There was also more overall activity during the midday hours on the weekend when compared to any time during the weekday, which is a result of higher shopping demand.

### Transit Needs

Transit in the study area consists of a single bus, Route 10, operated by Greater Bridgeport Transit (GBT). Bus stops are provided throughout the corridor, most marked by a GBT sign including basic route information. Bus stops do not feature shelters or benches. All GBT buses are equipped to carry bicycles, with racks available on a first-come, first-serve basis.

Of note for a study corridor with significant retail activity is that Saturday ridership exceeds weekday (and Sunday) volume. In this case, Black Rock Turnpike functions more as a destination than an origin for transit trips.

Transit riders are also pedestrians, and thus issues pertaining to safety, comfort and accessibility at the street and sidewalk level apply to GBT bus riders. Some sidewalk gaps exist along the study corridor and numerous curb cuts affect the walking environment and safety for pedestrians.





**Figure 8: Pedestrian Crossing and Typical Transit Stop**

Bus layover locations are an ongoing concern for Greater Bridgeport Transit, as transit reliability is dependent on scheduled down-time for bus operators at route ends. Currently, GBT uses the turnaround loop via Fairfield Woods Road and Stillson Road to lay over; however, community pressures over the years have often forced GBT operators to move buses or find new space. GBT would benefit from a formal, agreed upon layover location to ensure reliable operation of Route 10.

### Traffic

A review of the historic average daily traffic (ADT) volume data collected indicates daily traffic volumes along Black Rock Turnpike peaked around 2005 and declined until 2013. Following 2013, volumes have shown a modest increasing growth trend, averaging between 18,000 and 23,000 vehicles per day. Traffic levels during the weekday afternoon and Saturday peak hours tend to be higher than other periods throughout the week, which reflects higher percentages of retail traffic mixing with the commuter traffic. The

busiest areas on Black Rock Turnpike occur proximate to the larger retail developments. Traffic is lighter north and south of the Study Area. This pattern is consistent with the intensity of land uses along Black Rock Turnpike.

Results of the traffic analysis indicate that most of the study intersections operate at a Level of Service (LOS) D or better during typical weekday morning and afternoon and at LOS B or better during typical weekday midday and Saturday peak hours. Although LOS A through D are generally deemed acceptable for developed areas, there are situations where a specific intersection approach or movement experiences LOS of E and F (the lowest), even if the total intersection does not. These occurrences typically occur during peak travel times in the morning or evening and motorists traveling along such approaches can often experience delays. In addition, the complex interaction of driveways upstream and downstream of intersections often creates congested conditions that the modeling of individual intersections does not consider. Still, the LOS analysis is a valuable tool for checking the effectiveness of signal timing and lane configurations at the major corridor intersections.

Queuing exists at specific approaches to the intersections in the central portion of the study area between the intersections with Samp Mortar Drive and the Turnpike Shopping Center and Fairway Plaza driveways. Along this segment the closely spaced intersections and high traffic volumes from the dense commercial development result in queues that extend beyond the available road storage, resulting in additional congestion that may not be fully represented in the level of service results. It is important to recognize that when conducting traffic operations modeling that several factors need to be considered when measuring the effectiveness of a roadway to efficiently move traffic. The complex operation of Black Rock Turnpike is difficult to model, and though the signal systems seems

to be capable of handling the volume of traffic, many other factors are responsible for the delay often experienced by motorists.

The vehicle speeds during the off-peak (low volume) hours of the day were consistently higher than during the peak (high volume) hours. Off-peak vehicle speeds had the highest variation from peak-hour speeds in the southbound direction, south of Stillson Road and in the northbound direction, north of Arrowhead Lane. Since commercial development and pedestrian activity also increases to the south of Stillson Road, higher vehicle speeds during the off-peak hour in this location are potentially hazardous. It should also be noted that vehicle speeds during both the peak and off-peak hours were highest at the far north and far south ends of the study area (west of Arrowhead Lane and east of Black Rock Turnpike). In the peak hours, average vehicle speeds were approximately 35mph in both locations, in both directions (southbound and northbound). In the off-peak hour, average vehicle speeds were approximately 40mph in both locations and in both directions. These higher speed conditions make pedestrian and bicycle crossings difficult and potentially hazardous. Speeds higher than 25 miles per hour are statistically proven to be responsible for serious injuries and/or fatalities when pedestrians are involved in a crash. High speed coupled with the high frequency of driveways is a recipe for diminished safety for all road users.

### Safety

Across the three-year analysis period (2014-2016), there were 428 total crashes that occurred within the study area—a road segment approximately 1.73 miles in length.

A crash rate of 11.9 crashes per million vehicle-miles of travel was calculated, which is approximately two times higher than the average crash rate (5.8 crashes per million vehicle-miles) on an urban four-lane undivided roadway in Connecticut. Four-lane roads are almost always higher in crash occurrences due to the complex weaving characteristics, speed and diminished sight lines. When adjusting the crash rate for the highest crash segment of Black Rock Turnpike from the intersection with Whitewood Drive to the intersection with Samp Mortar Drive, a crash rate of 19.1 crashes per million vehicle-miles travelled was calculated. This crash rate is over three times higher than the average crash rate on a typical urban undivided roadway in Connecticut. Over the course of the three-year study period, the majority (77%) of the crashes were property-damage-only crashes. Twenty-two percent (22%) of the crashes involved an injury. There were three fatal crashes, occurring in the three-year period analyzed.





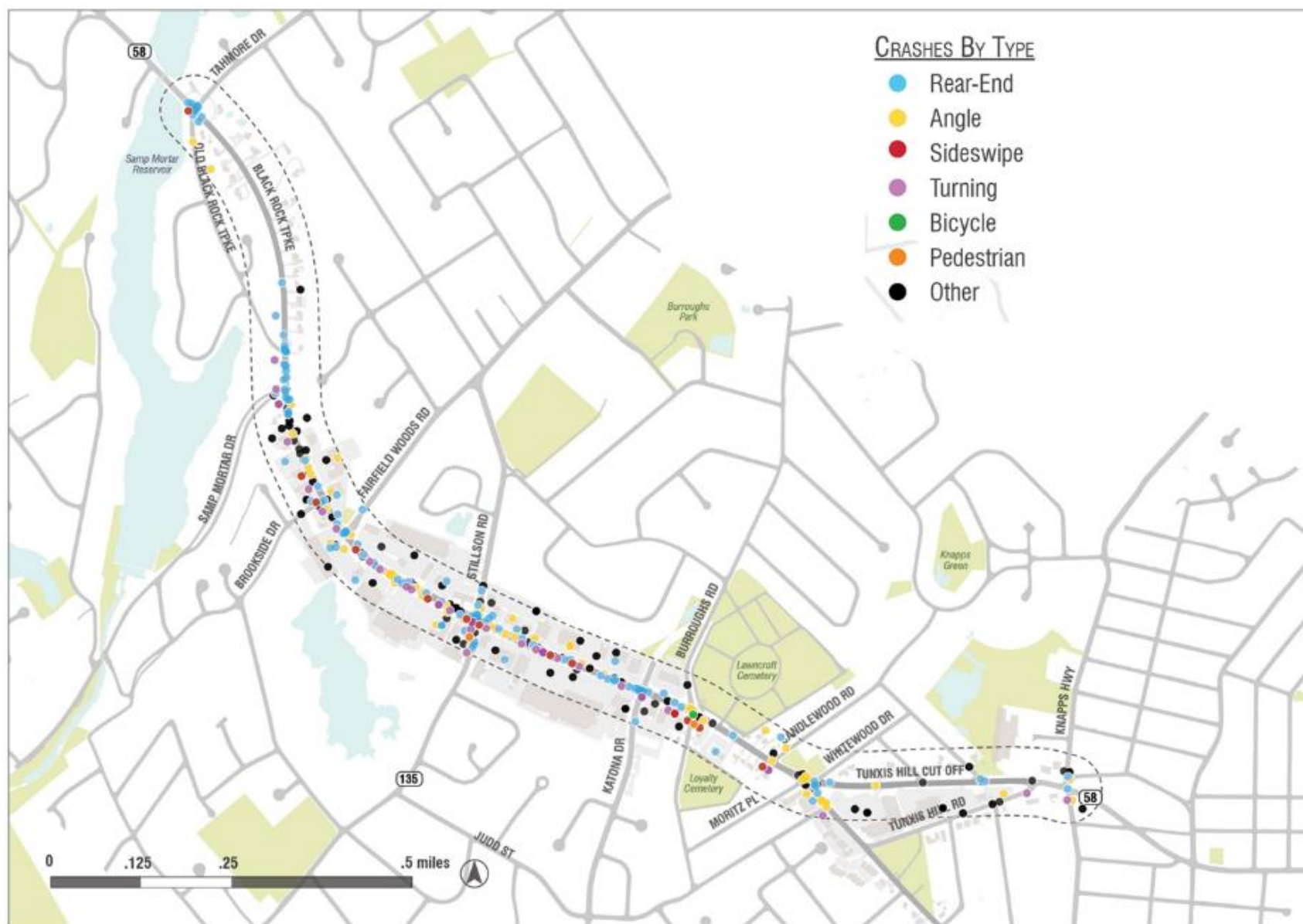


Figure 9: Locations of Crashes by Type (Source: Connecticut Crash Data Repository, September 2017)

For the segment of Black Rock Turnpike north of Tahmore Drive, the overall crash rate is significantly lower than the crash rate for the same period along the primary study area. The lower crash frequency does not diminish the serious consequences of the crashes that did occur; however, most of those crashes are related to the Merritt Parkway ramp system and should be more thoroughly evaluated independently from this study.

## Supplemental Drone Data

In addition to the count data, the study team collected video footage of the corridor using several aerial drones. This footage was taken for approximately 15 minutes at 5:00 PM on Wednesday, October 11th. Given the complexity of traffic conflicts along this corridor, the study team used this information to confirm the traffic count data that was collected via other sources as well as to better understand complex operational characteristics. The video and data were also used to calibrate the traffic models which provided the Study Team with a higher level of confidence in the proposed concept plans.

Once collected, the drone videos were processed by Data From Sky, a company that builds software to extract the time-space-trajectories of vehicles in aerial videos. This approach provided automatic calculation of a wide range of traffic parameters, such as speed, acceleration, and detailed traffic counting that was simply not possible with conventional tools. When used as a supplement to the existing data collected, the sample video footage answered many questions that the Study Team had about how the corridor was used and provided a visual way to communicate complex operational conditions to the public.

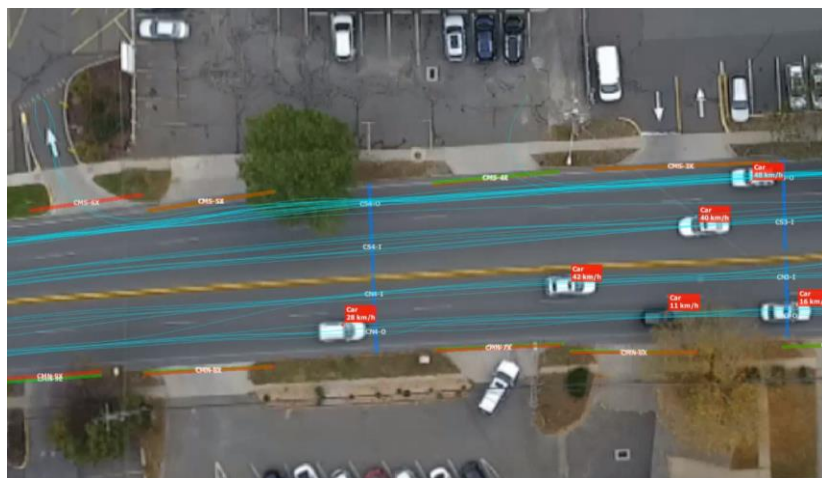


**Figure 10: Mike Gearin from PhotoFlight Aerial Media Launches a Drone**



**Figure 11: Drone flight coverage area**





**Figure 12: Screen-capture of Vehicle Trajectories along Black Rock Turnpike**  
(Source: PhotoFlight Aerial Media and Data From Sky, October 2018)

Following the post processing of the aerial video, the Study Team used the software developed by Data From Sky to analyze a range of conditions that led to a more nuanced understanding of the corridor, and ultimately, a more thoughtful range of potential solutions.

The earlier data collection effort provided limited speed data at a few spot locations but didn't fully explain where high speed activity was most common. The video data provided a much clearer picture of locations where high-speed traffic occurs and where it mixes with lower-speed vehicles. Speed is the greatest contributor to crashes, both in terms of frequency as well as severity. Seeing where average speed above posted speeds was allowed for the targeted application of safety countermeasures in the recommended plan presented later in this report. Figure 13 shows a speed heat map of the corridor.

Another common issue that exists on multi-lane arterials with a high degree of driveway access is frequent lane changing behavior. Drivers who frequently change lanes to avoid slower or turning vehicles present a higher risk of collision. Using the aerial video and software analysis, the Study Team was able to track all the vehicles making a complete trip from one end of the corridor to the other and count how many times those vehicles were changing lanes.

As listed in Table 1, the southbound direction of Black Rock Turnpike experienced a higher degree of frequent lane changing behavior with at least 40% of counted vehicles making at least four lane changes, and some making as many as eight. In the northbound direction, the lane changes were less pronounced with most of the traffic making one to two lane changes between Tunxis Hill Cutoff and Brookside Drive. This data was instrumental in identifying safety countermeasures aimed at stabilizing traffic flow and reducing risky driving behavior.

|                | Southbound   | Northbound   |
|----------------|--------------|--------------|
| # lane changes | % of traffic | % of traffic |
| 0              | 100%         | 100%         |
| 1              | 88%          | 57%          |
| 2              | 77%          | 29%          |
| 3              | 68%          | 21%          |
| 4              | 40%          | 14%          |
| 5              | 28%          | 7%           |
| 6              | 14%          | 0%           |
| 7              | 4%           | 0%           |
| 8              | 2%           | 0%           |

**Table 1: Number of Lane Changes along Black Rock Turnpike** (Source: PhotoFlight Aerial Media and Data From Sky, October 2018)

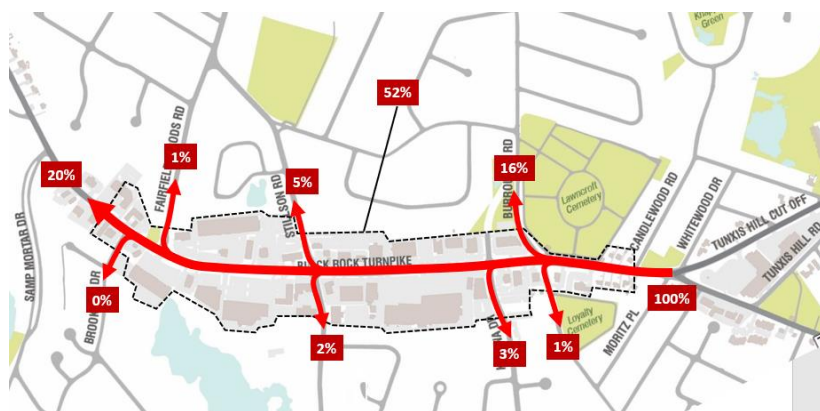


**Figure 13: Average Vehicle Speed** (Source: PhotoFlight Aerial Media and Data From Sky, October 2018)

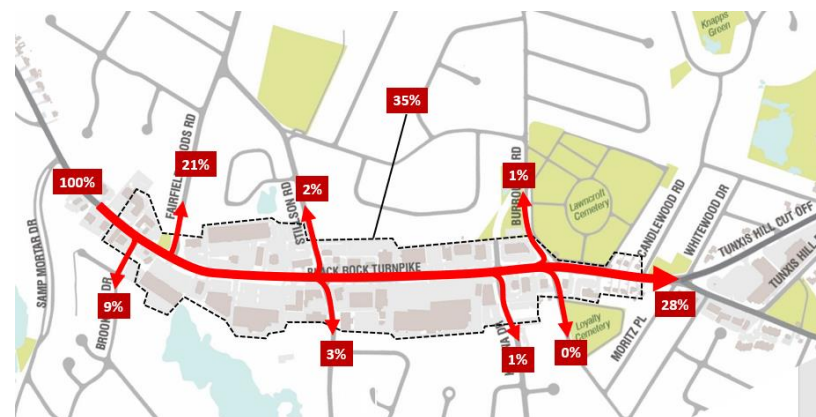


Another frequent assumption is that the typical commuter hours of the day experience more ‘through’ traffic than other time periods. Through traffic is that which passes through the corridor without stopping along the way. This assumption sometimes leads to improper responses to corridor development because it suggests that commuter traffic be facilitated by providing greater road capacity to reduce congestion.

Along Black Rock Turnpike, the drone analysis was able to count each vehicle as it entered the video and track it until it made a turn or came to a stop in a parking lot. In the northbound direction, only 20% of entering traffic passed through the corridor to the opposite end. In fact, 52% of all northbound traffic was destined for a business along the way. In the southbound direction, those values were 28% and 35% respectively. The value of knowing this information established the need to provide safer access to commercial properties for all modes of travel as a primary objective. This section of the Turnpike is a retail destination and as such would benefit from solutions that deemphasized the high-speed and highway-centric design characteristics of the past.



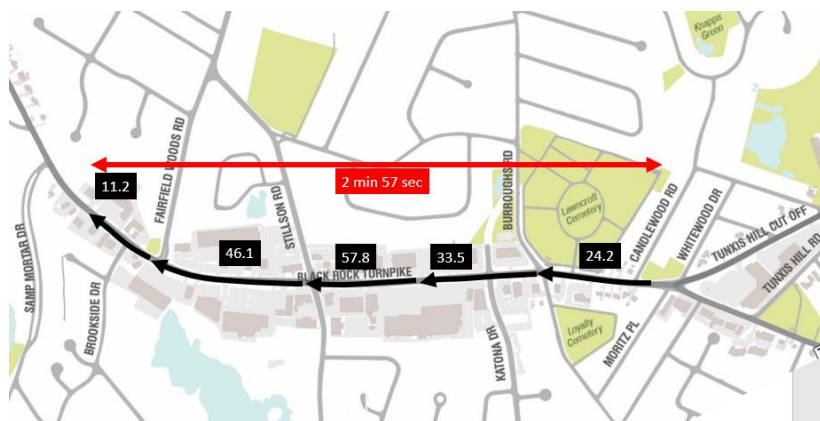
**Figure 14: Northbound Travel Patterns along Black Rock Turnpike** (Source: PhotoFlight Aerial Media and Data From Sky, October 2018)



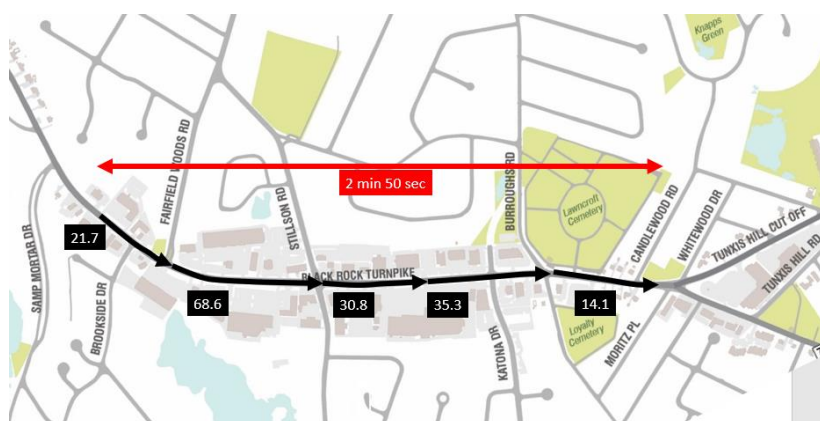
**Figure 15: Southbound Travel Patterns along Black Rock Turnpike** (Source: PhotoFlight Aerial Media and Data From Sky, October 2018)

Regarding congestion and driver delay along the Turnpike, the data suggests that human perception paints a slightly different picture than reality. Given the frequency of crashes along the corridor, extreme congestion is something that most people using the Turnpike have experienced at one time or another. However, this is not a typical condition as evidenced by the data collected in this study. Under typical PM peak hour conditions, vehicular travel time from the Tunxis Hill Cutoff to just north of Brookside Drive takes about three minutes. This time includes any stop delay experienced at traffic signals and is an average time for all vehicles that made the end-to-end trip and captured in the drone video.

It should be noted that this time confirmed similar travel times measured with conventional data collection methods earlier in the study process. Atypical conditions, such as high demand shopping days (e.g. the Christmas holiday week) could certainly result in greater delay than was measured.



**Figure 16: Screen-capture of Vehicle Trajectories along Black Rock Turnpike**  
(Source: PhotoFlight Aerial Media and Data From Sky, October 2018)

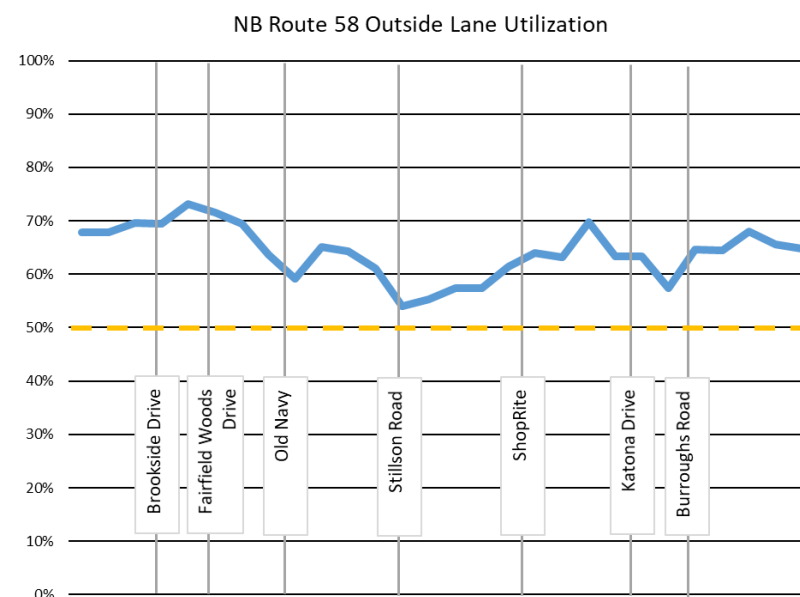


**Figure 17: Screen-capture of Vehicle Trajectories along Black Rock Turnpike**  
(Source: PhotoFlight Aerial Media and Data From Sky, October 2018)

Another assumption requiring confirmation from the drone data was the relative usage of each travel lane by direction. The term lane utilization was used to explain how much traffic used the inside and outside (curbside) lanes. This was an important observation because on most multilane roads with frequent driveway access, the inner

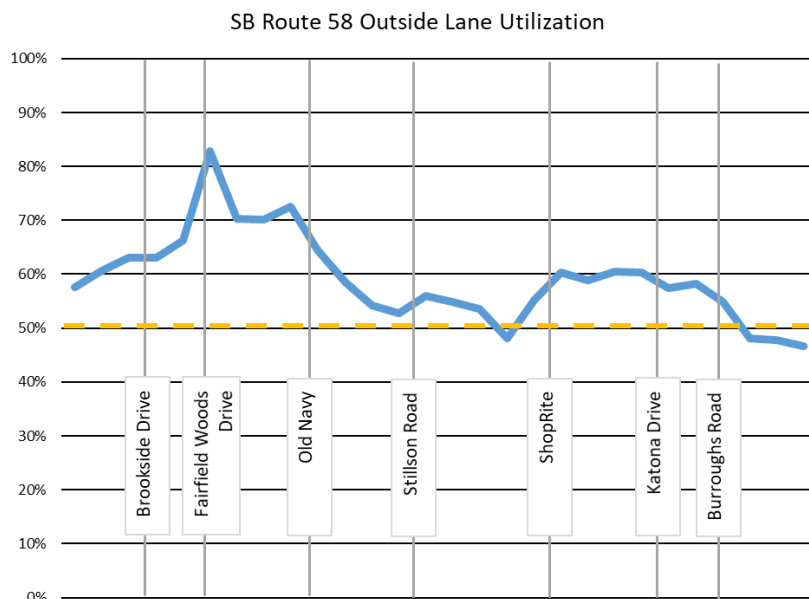
lanes carry lower volumes of traffic because the inner lanes serve as de facto left turn lanes when protected left turn pockets don't exist.

Based on the drone video analysis, approximately 60% to 70% of the traffic uses the curbside lane in the northbound direction. In the southbound direction, results are similar, with over 80% curbside utilization at the intersection of Fairfield Woods Road. These findings were significant because they verified that reductions in the number of travel lanes was possible along certain locations of the Turnpike. By reducing through lanes and providing protected left turn pockets, traffic flow could potentially be smoother, speeding reduced, pedestrian crossings shortened, crashes reduced, and side-street delay minimized.



**Figure 18: Northbound Lane Utilization along Black Rock Turnpike** (Source: PhotoFlight Aerial Media and Data From Sky, October 2018)





**Figure 19: Southbound Lane Utilization along Black Rock Turnpike** (Source: PhotoFlight Aerial Media and Data From Sky, October 2018)

The drone video analysis allowed the Study Team to confirm several previously observed conditions with concrete data verification. As the various traffic models used in the study were developed, the video results led to a much better calibration to real-world conditions than would have been possible with the conventional data sources available.

## Conclusions

Black Rock Turnpike is a 4-lane state highway originally designed to facilitate regional travel with a modest level of access to private property. Over the years, the segment of the Turnpike between Samp Morte Drive and the Tunxis Hill Cutoff has evolved into a major

commercial corridor with very high levels of access to property. The physical design of the road encourages high speed driver behavior, and the heavy traffic volume that results from a mix of shopping and commuter traffic creates an environment that is compromised for both travel mobility and accessibility to properties along the road. In fact, this segment of the Turnpike has a crash rate 2 to 3 times higher than that of a typical 4-lane urban road in Connecticut.

In addition to diminished safety and driver frustration stemming from congestion, Black Rock Turnpike also presents a hostile environment for pedestrians and bicyclists. Whether walking along the Turnpike or crossing it, pedestrians are often at a significant disadvantage. Crosswalks are infrequent and long, pedestrian visibility to motorists is low, and the frequent driveways pose a constant threat to those walking the sidewalks. Bicyclists, save the very skilled riders, appear to avoid Black Rock Turnpike in favor of other routes even though they aren't as direct.

Based on the data collected and analyses performed as part of this existing conditions evaluation, the study team concluded that Black Rock Turnpike requires a level of redesign that emphasizes safety for all users, while still maintaining adequate access to the residences and businesses along its length. In areas with high crash frequencies and/or severe crashes, near-term mitigations are necessary. In the longer-term, a more system-wide solution to dealing with a wide range of stated deficiencies may be necessary.



*Figure 20: Screen capture of VISSIM traffic model calibrated with PM peak hour drone data*



## 4. FUTURE NO-BUILD CONDITIONS

A future 20-year growth rate for traffic on Black Rock Turnpike was calculated for the purpose of developing roadway solutions that are expected to satisfy future transportation demands. Historic average daily traffic (ADT) was collected for Black Rock Turnpike and intersecting routes (e.g. Rt. 135 / Stillson Road and Rt. 732 Tunxis Hill Cut Off) from 2001 to 2013. This data was supplemented with 24-hour traffic counts collected in 2017. The annual average percent change (AAPC) from 2001 and 2017 for all count locations along Black Rock Turnpike is -0.2% per year – essentially no growth.

In addition to the traffic data, the study team conducted an interview with property owners of a significant portion of the retail space along the corridor. Their anecdotal assessment of future conditions is that the retail environment is changing due to the intense competition from online retailers. This is resulting in lower demand for space that can be used for large shopping establishments and an increase in demand for fitness centers, such as yoga studios and health clubs, which have different traffic peaking characteristics. In summary, they don't see meaningful traffic growth as a result of changing retail into the future. If anything, they see more spreading of traffic throughout the day as a possibility.

Based on the quantitative and anecdotal data, it is assumed that Black Rock Turnpike from Tahmore Drive to the Tunxis Hill Cutoff will experience a flat growth rate over the next 20 years; however, the Town of Fairfield anticipates some additional housing development near the study corridor and wishes to include some limited traffic growth in the future forecast. As a result, the study used a modest growth rate of 0.25% per year from 2017 to 2027. This growth rate

was applied to the peak hour traffic data and used in traffic models to predict future peak hour operations at study area intersections.

### Future Conditions Traffic Assessment

The future conditions analysis included traffic growth projections to expand the 2017 existing traffic volumes to the 2040 background traffic volumes. The Black Rock Turnpike study area intersections were analyzed under two scenarios: a 'Background' and a 'Background-Optimized' condition. The 2040 Background analysis utilizes existing road geometry and existing traffic signal settings to draw a direct comparison between existing and future conditions. The 2040 Background-Optimized analysis utilizes existing road geometry but modifies intersection signal timings and settings to provide the most efficient operations for future conditions. This optimization analysis determined if future operational issues can be mitigated through low-cost adjustments to signal operations or if additional physical improvements are needed to provide measurable capacity improvements. Although these Background analyses provide a basis for generating roadway improvements to accommodate anticipated traffic growth for the corridor, they do not factor in safety related issues, which was a primary factor in developing corridor improvements.

### Background Traffic Operations

Utilizing the existing geometry and traffic signal settings established under the 2017 Existing Traffic analyses, traffic operations for the 2040 Background Traffic Volumes were evaluated for the study area intersections using Trafficware's *Synchro plus SimTraffic 10 – Traffic Signal Coordination Software*, based on the *Highway Capacity Manual (HCM) 6<sup>th</sup> Edition* methodology.

The background traffic growth slightly exacerbates existing capacity issues detailed in the Existing Conditions Technical Memo. Comparing the existing conditions to the background conditions, the following overall LOS deterioration was identified from the analyses during the specified peak hours:

- Black Rock Turnpike at Tahmore Drive: Decreased from C to D in the afternoon
- Black Rock Turnpike at Stillson Road: Decreased from D to E in the afternoon
- Black Rock Turnpike at Fairfield Woods Road: Decreased from A to B on Saturday
- Black Rock Turnpike at Turnpike Shopping Center: Decreased from B to C on Saturday
- Tunxis Hill Cutoff at Tunxis Hill Road (unsignalized): EBL decreased from C to D on Saturday

Select intersection approaches also experienced decreases in LOS, mainly at the intersections where the overall LOS experienced a decrease. These decreases are a result of the incremental growth in traffic volume, which cause incremental increases in delay and subsequent decreases in LOS. Just as with the existing conditions scenario, the most significant congestion is focused on the Black Rock Turnpike at Stillson Road (Route 135) intersection.

### Background Optimized Traffic Operations

The 2040 Background Traffic Volumes were also analyzed with an optimized traffic network where the lane geometry remained unchanged, but traffic signal timings were optimized and additional coordination was added along the corridors. The purpose of the 2040 Background-Optimized traffic analysis is to determine how the

existing signalization along the corridor would process expected future traffic volumes without any significant physical improvements.

The optimization process included a review of the coordinated system on the corridor, the coordinated system cycle lengths, and signal phase timing splits to balance delays on the intersection approaches to increase the efficiency of traffic operations. It also included modifications to the closed loop signal timing offsets which impact the progression of vehicles through the corridor. The optimization method was similar to the process employed by CTDOT, which monitors state-maintained closed loop systems and periodically modifies the signal timings based on current volumes to maintain operational efficiency. The optimization of the traffic signal operation included the following:

- Expansion of the existing closed loop coordination system on Route 58 (Black Rock Turnpike) to include all intersections from Tahmore Drive to Tunxis Hill Cutoff except for the intersection with Stillson Road, which runs free from coordination similar to the existing conditions
- Optimization of the study area intersection splits within existing minimums
- Optimization of the network cycle length and offsets for the coordinated system

The traffic signal optimization mitigates most of the delay caused by the additional background traffic growth. The following changes to LOS were identified from the analysis:

- Black Rock Turnpike at Tahmore Drive: Improved from D to C in the afternoon



- Black Rock Turnpike at Samp Mortar Drive: Improved from B to A midday
- Black Rock Turnpike at Fairfield Woods Road: Decreased from A to B midday
- Black Rock Turnpike at Turnpike Shopping Center: Improved from C to B on Saturday

The decrease in LOS at the intersection of Black Rock Turnpike at Fairfield Woods Road arose from a higher prioritization of other coordinated intersections in the optimization process in order to facilitate better operations along the corridor in its entirety. Significant overall intersection delays only persist at the intersection of Route 58 (Black Rock Turnpike) at Route 135 (Stillson Road) which operates at overall LOS E during the afternoon peak hour. However, there are individual movements at intersections along the corridor that operate at failing LOS E and F conditions and/or have queues extending beyond available storage. As a result, these Background Optimized analyses served as a basis for the creation of the recommended corridor concept plan, which aims to improve traffic congestion while also balancing traffic safety for all users of the corridor.

## 5. PUBLIC ENGAGEMENT

This Study has benefited from extensive community outreach that was intended to provide interested parties with a means to communicate their transportation needs and concerns with the project team. This input has greatly contributed to the team's understanding of the Turnpike and has guided the development of recommendations throughout the study.

The following summarizes the community engagement activities that have occurred thus far and has ensured that the *Black Rock Study* results in a plan that responds to the needs and desires of those who travel along and spend time on the Turnpike.

### Committees

The *Black Rock Study* is intended to be a collaborative effort among the many stakeholders with a vested interest in the future of the Black Rock Turnpike. As such, the project team received guidance from two advisory committee, both of which met throughout the project. The responsibilities of these committee members are as follows:

- Provide insight and expertise on local conditions and issues;
- Collaborate with the project team to brainstorm potential ideas and recommendations;
- Review and provide feedback on project products before they are broadly distributed to the public; and
- Assist with the project team's public and stakeholder outreach effort by (1) identifying information resources and potential lines of communication; and (2) helping to raise awareness about community outreach efforts.

The two committees are described in further detail below.

### Technical Advisory Committee

The Technical Advisory Committee (TAC) is comprised of representatives from the public organizations and agencies that are involved in the study. The project team met with the TAC three times over the course of the study to discuss technical issues about engineering, design guidelines, policies, and more.

### Community Advisory Committee

The Community Advisory Committee (CAC) includes representatives from local businesses as well as community organizations, groups, and institutions with key expertise and local knowledge about the Black Rock Turnpike. The CAC met twice over the course of the study to help the team understand local conditions in the neighborhood.

### Website

A publicly accessible project website accessed via <http://bit.ly/blackrocksafetystudy>, was developed and hosted on MetroCOG's website. The public has been encouraged to visit the website to learn more about the Black Rock Study, view meeting announcements and related materials, review published material and draft documents, and submit comments.

A significant number of comments were received via the website ([blackrockstudy@fhiplan.com](mailto:blackrockstudy@fhiplan.com)) and the project email that varied from questions, input, new ideas, and other considerations. The project team took this input into account throughout the Black Rock Study.

In addition, business cards with the project name, logo, and website address have been distributed to the public and available at all engagement events. Comments received over the course of the study are available in Appendix A.



### Pop-Up Outreach Event

Two pop-up events were conducted on

1. Saturday, June 3<sup>rd</sup>, 2017, near the entrance/exit to ShopRite along the Black Rock Turnpike, and
2. Saturday, September 23<sup>rd</sup> at the Kiwanis Craft Fair on Town Green.

The purpose of the events was to:

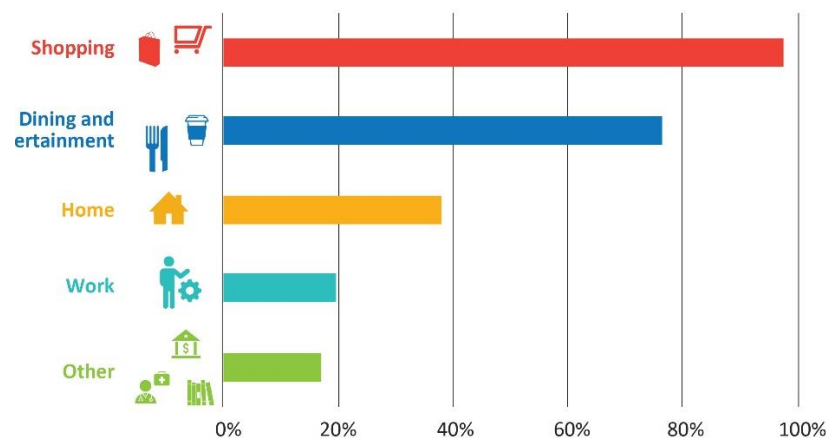
- Solicit input on the community's impressions of the Turnpike's existing issues.
- Introduce the community to the project and encourage the community to attend the June and November (2017) Public Meetings.
- Distribute the URL link to the online survey (June 2017).

### Online Survey

An online survey was conducted during the summer of 2017 to help the project team better understand the issues and opportunities for all those who travel along the Turnpike, including motorists, bicyclists, pedestrians, and transit users. The survey was available for the public to participate from Monday, May 22<sup>nd</sup> to Friday, July 28<sup>th</sup> and it was advertised via a press release from the Town of Fairfield; social media sites for MetroCOG and the City of Fairfield; various mailing list-serves, including the one developed for this project; the Committee members' networks; local community blogs and websites; and more.

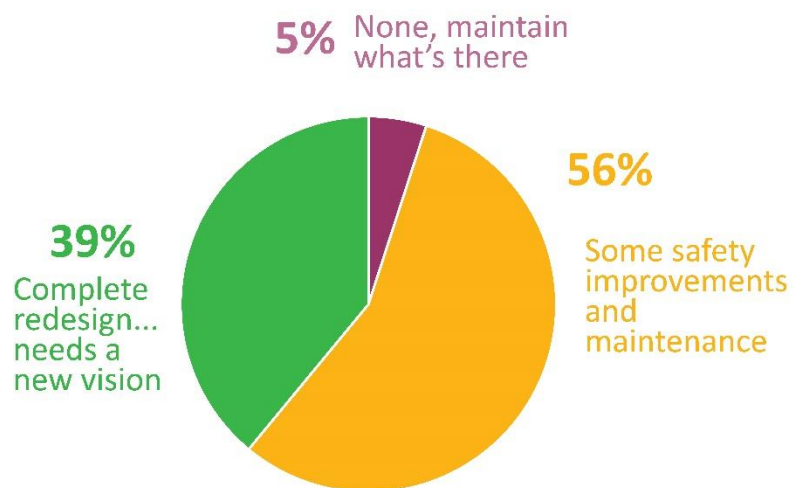
A total of 1,069 people completed the survey, approximately 70% of whom live in Fairfield. Respondents answered questions about how and why they currently travel along the Black Rock Turnpike as well as what improvements they would like to see along the Turnpike in the future. A full compilation of results, including comments, can be found in Appendix A of the Existing and Future Conditions Technical Memorandum.

As the following graph indicates, most travelers using the Turnpike are destined for shopping or dining purposes. As a major regional retail corridor this is not surprising; however, it is important to recognize that the corridor is adjacent to several neighborhoods, so it serves as access to and from homes and employment locations.



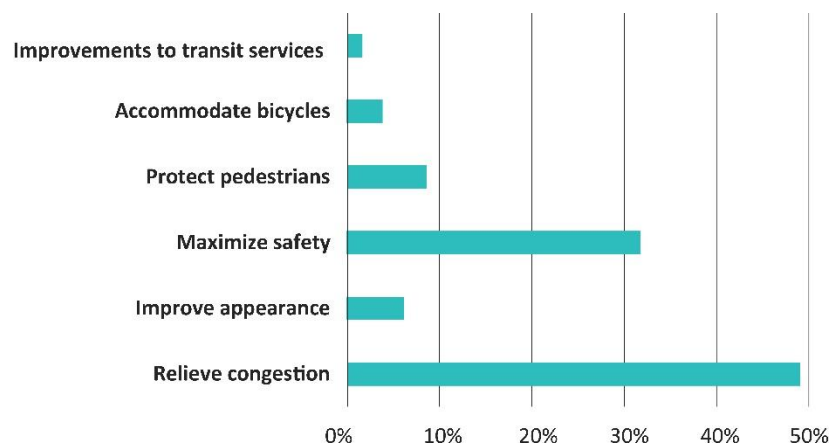
**Figure 21: Trip purpose survey results**

When asked how ambitious the Study Team should be regarding corridor modifications, most respondents (56%) wanted to see safety improvements and general road maintenance. Still, many respondents (39%) indicated that a new corridor vision and full redesign of the road was needed. Only 5% of respondents voted to keep the road the way it currently is.



**Figure 22: Survey response for how ambitious the corridor plan should be**

While a full range of improvements was desired, most respondents wanted to maximize safety while relieving congestion.



**Figure 23: Survey response for study objectives**

### Public Meeting #1

Three public meetings were held over the course of the study. The first public meeting was held on Wednesday, June 7<sup>th</sup>, 2017 at 7:00 PM at All-Purpose Room at Osborn Hill School. The meeting included a presentation and small group breakout sessions for an interactive activity aimed at helping the Study Team understand the issues along the corridor.



**Figure 24: Small Group Working Session, June 7<sup>th</sup> Public Meeting**

### Public Meeting #2

The second public meeting was held on Thursday, November 16<sup>th</sup>, 2017 at 7:00 PM at the All-Purpose Room at Osborn Hill School. After a presentation on the corridor needs and opportunities, the audience was polled to get a sense for the types of improvements that they wanted the Study Team to evaluate for Black Rock Turnpike.

Based on a polling exercise at the meeting, there was general acceptance of a range of potential solutions for Black Rock Turnpike. Potential improvements that the public was strongly in favor of is as follows:



- Access Management – the practice of consolidating driveways and controlling access in order to improve safety
- Road Diet – reducing the width of a road by narrowing lanes or removing travel lanes
- Enhanced Crosswalks – Installing high visibility pedestrian crossings using special pavement, lighting, landscaping and refuge islands

Potential improvements that the public was generally in favor of, but had some reservations is as follows:

- Median Barriers – Using raised medians to restrict left turns in and out of driveways to improve safety and traffic flow
- Roundabouts – a traffic control device that calms traffic, reduces crashes, and allows for lane reductions

Potential improvements that the public was not in favor of is as follows:

- Bicycle Lanes – providing a dedicated lane for bicycle travel

### *Public Meeting #3*

The third and final public meeting was held on Thursday, November 5<sup>th</sup>, 2018 at 7:00 PM at the All-Purpose Room at Osborn Hill School. The purpose of the meeting was to present the concepts to the public and document their feedback. The event was well attended and there was generally positive reaction to the concept plans. No significant revisions to the recommendations were necessary as a result of the meeting.

### *Property Owner Meetings*

The Study Team met with Kleban Properties on two occasions during the study. The first meeting provided feedback on corridor growth potential which was helpful in determining a future year traffic

forecast. The second meeting was for the purpose of reviewing the initial concept plans and getting feedback on how the major retail establishments on the Turnpike would operate under some of the proposals. The meeting resulted in several modifications to the initial concept plan.

## 6. CONCEPTS

### Initial Concept

The initial concept for Black Rock Turnpike was developed with the primary purpose of addressing the safety issues in the corridor. This concept plan was tested using PM peak hour data from the traffic count program and the drone analysis. A computer traffic simulation model was developed to guide the design of the improvements.

The initial concept was developed with optimum safety as the goal. As such, the concept had some drawbacks regarding traffic congestion and property access. As the Study Team met with affected stakeholders and the public, it became clear that some of the recommendations would not receive community support and would need to be removed from the plan. The initial concept can be found in Appendix B to this report, so that all ideas to address safety deficiencies in the corridor remain documented.

### Recommended Plan Components

The recommended concept plan for Black Rock Turnpike strives to address as many safety deficiencies as possible while still offering adequate capacity for cars and trucks. Given the regional commercial status of the corridor, the Town of Fairfield stressed the importance of not further exacerbating current levels of congestion. While some congestion (especially during peak shopping days) is inevitable, it is expected that fewer crashes will reduce some of the unpredictable delay occurring along the corridor. In totality, the corridor improvement plan can be best summed up as a strategic set of safety countermeasures that work in concert to reduce vehicle speed, minimize unsafe driver behavior, and offer pedestrians better

protection and visibility in the public right-of-way. The important elements of the plan are detailed in the following sections.

#### Lane reductions

Reducing the number of lanes on 4-lane roads can have a dramatic effect on reducing the number of crashes. There are several noteworthy benefits of reducing the number of lanes:

- Reduced lane changing behavior
- Improved lines of sight for drivers exiting driveways
- Consistent and safe traffic speed
- Reduced crossing distance for pedestrians
- Improved ingress/egress at driveways

Although a conventional road diet (reducing 4 lanes to 2 lanes plus a two-way-left-turn-lane) was not possible for the entire length of Black Rock Turnpike, the reduction of a travel lane entering the corridor from both the north and south is possible. The value of establishing single lane approaches to the corridor is that traffic enters at a controlled rate of speed which sets the tone for safer driving behavior. The abrupt change of environment from low density residential land uses to the north and south, to high density commercial requires physical design interventions aimed at reducing vehicular speed and requiring maximum driver attention. Detailed traffic analysis performed in this study proved that limited lane reductions can be effective at achieving these objectives.





**Figure 25: Lane reduction segments**

## Modern roundabouts

Another traffic control feature that is recommended for strategic locations along the Black Rock corridor is the modern roundabout. A roundabout is a type of circular intersection but is quite unlike a neighborhood traffic circle or large rotary. Roundabouts have been proven safer and more efficient than other types of circular intersections.<sup>1</sup> Roundabouts have the following noteworthy benefits:

- Promote slower vehicle speeds
- Reduced vehicle queuing
- Safer pedestrian crossings
- Reduced crash potential

<sup>1</sup> <https://safety.fhwa.dot.gov/intersection/innovative/roundabouts/>

- Allows for potential lane reductions

In the initial concept design, three locations were identified for possible roundabout applications. These locations were as follows:

1. At the Tunxis Hill Cutoff
2. At Katona Drive
3. At the Old Navy/Trader Joe's driveway

After reviews with property owners and thorough evaluation of potential impacts, the Katona drive roundabout was eliminated from the recommended plan. This was largely due to the roundabout's inability to process weekend shopping traffic.

A roundabout at the Tunxis Hill Cutoff serves as a corridor gateway treatment. This complex intersection would benefit from a simplified roundabout and would facilitate a lane reduction northbound to Burroughs Road and southbound approaching the roundabout. This segment of the Turnpike was determined to consist of high-speed traffic and limited pedestrian crossing opportunities. The roundabout establishes a transition from the lower density residential corridors to the east and south, to the conflict-rich commercial environment to the north. Given the concentration of bicycle and pedestrian crashes near the Burroughs and Katona intersections, establishment of slower traffic and safer driver behavior was a top priority.

The second location for a roundabout is at the driveways with Old Navy Plaza and Trader Joe's. These offset driveways prove challenging for drivers to enter and exit across multiple traffic lanes filled with high speed traffic. The proposed roundabout at this location would serve to slow vehicles travelling along the Turnpike, while providing improved access to adjacent properties. This

roundabout would require significant redesign of adjacent parking lots and would likely result in the loss of several parking spots. The tradeoffs include:

- Slower traffic speed
- Reduced crashes at the driveways
- Safer pedestrian crossing opportunities
- A turnaround and staging area for Greater Bridgeport Transit District buses



**Figure 26: Modern roundabout locations**

## Pedestrian crossings

One of the most frequent comments received from members of the public was that crossing Black Rock Turnpike is challenging, both in terms of the infrequency of crossings as well as the perceived lack of safe and comfortable accommodations. A priority for this corridor

plan was to improve conditions for all people using the Turnpike, and to the extent possible, lessen the need for cars to make short trips.

Although the sidewalks along the Turnpike are generally in good shape, and crosswalks exist at signalized intersections, the overall feeling from pedestrians was that designated crossings are too infrequent and are not always located at places people wish to cross. In the following figure, the four locations that were deemed to need enhanced pedestrian accommodation are shown. They are:

1. At the Tahmore Drive intersection – shorten crosswalks and include them on all four legs with an exclusive pedestrian signal phase
2. Between Old Navy and Trader Joes's – Reduced travel lanes and a median refuge island, combined with a high visibility crosswalk and HAWK signal
3. Between Shop Rite and CVS – High visibility crosswalks
4. At the Tunxis Hill Cutoff intersection – new pedestrian crosswalks integrated with the proposed roundabout



**Figure 27: Enhanced pedestrian crossing locations**

## Intersection modifications

For intersections that remain signal controlled, modifications are proposed to enhance operations corridor wide. Many of the recommendations provide dedicated left and/or right turn pockets to provide safer and more efficient use of intersection capacity.

Additionally, separate closed loop coordination systems on Black Rock Turnpike are provided for the intersections from Tahmore Drive to Fairfield Woods Road; and from the Turnpike Shopping Center and Fairway Plaza Driveways to Burroughs Road. All intersections were adjusted for optimized splits, cycle lengths and offsets.



**Figure 28: Intersection modification locations**

## Access Management

The high number of driveways along Black Rock Turnpike creates significant safety challenges because the road is designed to facilitate vehicular mobility but also serve access to the numerous residential and commercial properties adjacent to the road. This is of concern because curb cuts (driveways) increase conflicts between higher speed through traffic and slower speed drivers turning in and out of parking lots.

In addition to the location of a high concentration of curb cuts between Stillson Road and Burroughs Road, people expressed concern over the Old Navy plaza and Trader Joe's driveways between Fairfield Woods Road and Stillson Road. Crash data at this location indicated that this area experiences the greatest number of driveway-related crashes in the corridor.

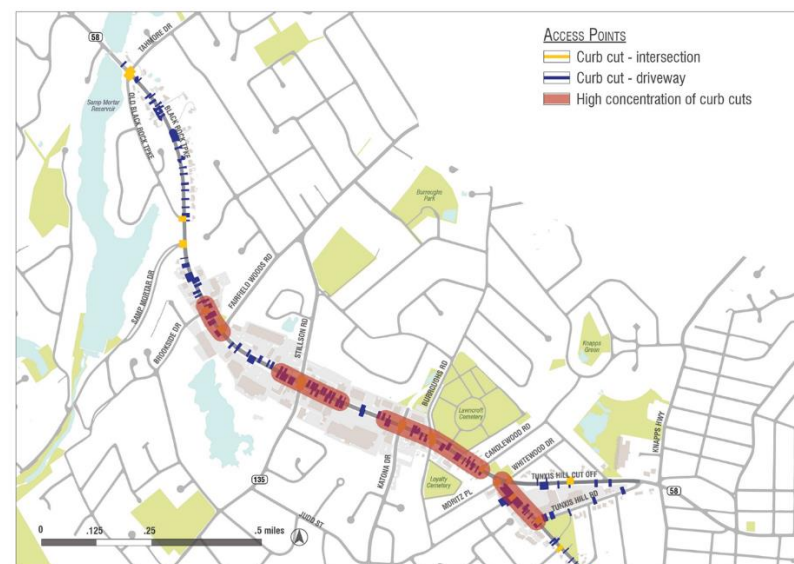


During the online public survey, many respondents stated that the high number of driveways contributed to a stressful driving environment as turning traffic causes some drivers to abruptly change lanes. Public comments expressed a desire for the project to consider cross property connections wherever feasible.

Access Management is the proactive management of property access points to promote safer and more efficient traffic operations. The approach of this project with regards to access management was to:

1. Establish opportunities for cross-property connections wherever possible,
2. Eliminate redundant access points on single parcels whenever feasible,
3. Restrict access of driveways to right-in or right-out to minimize risky left-turning movements.

Appendix C details the access management recommendations for the corridor in greater detail. As Black Rock Turnpike continues to be developed over time, this plan can serve as a guide for the Town of Fairfield to use when dealing with property owners and the CT Department of Transportation. While making access modifications can be challenging and take many years, it is one of the more cost effective and beneficial solutions to addressing safety and congestion in the corridor.

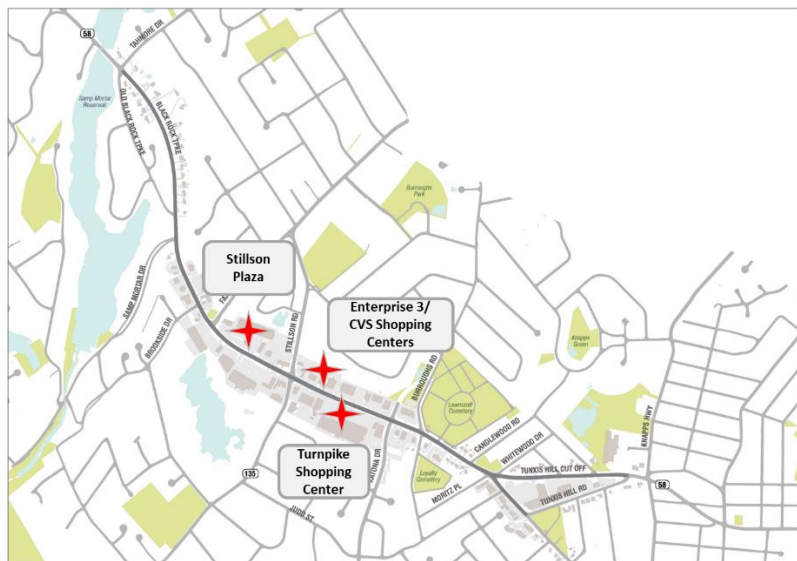


**Figure 29: Locations for access management**

## Parking lot circulation

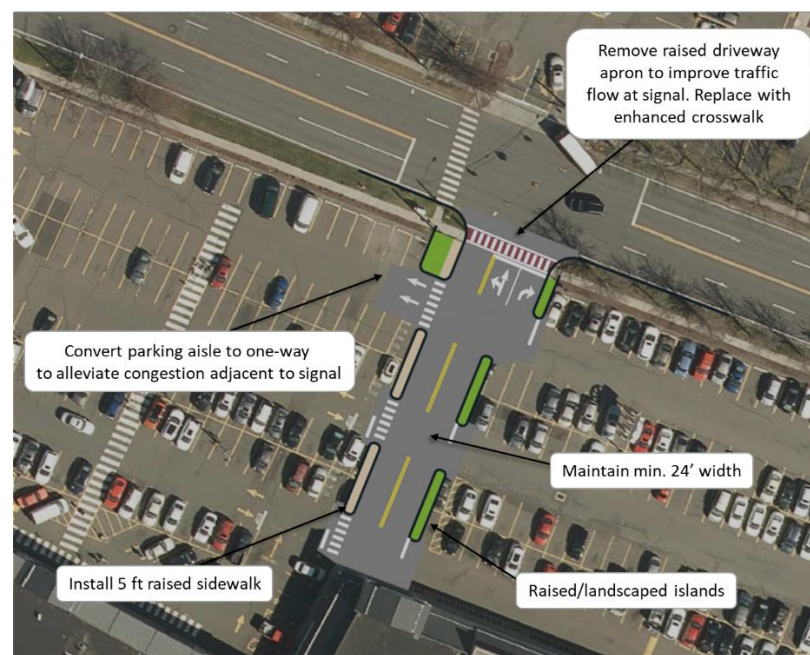
While not part of the public right of way, parking lots adjacent to Black Rock Turnpike can influence safety and operations along the corridor. Good parking lot design allows vehicles to enter and exit safely, without blocking intersections. They should also be designed to protect pedestrians by minimizing conflicts with other vehicles. Parking lots also offer an opportunity to reduce the number of driveways by providing good internal circulation and access across adjacent properties. As traditional brick and mortar retail continues to evolve over time, and as new car technologies gain adoption, the conventional wisdom that governs parking demand is sure to change. As this happens, property owners should consider modifying their parking lots to support the access management recommendations in this plan. Some initial ideas for modification of parking lots at Stillson Plaza, Enterprise 3 Shopping Center, and the Turnpike Shopping

Center were explored; however, more detailed engineering would need to be performed in the future.



**Figure 30: Parking lot modification locations**

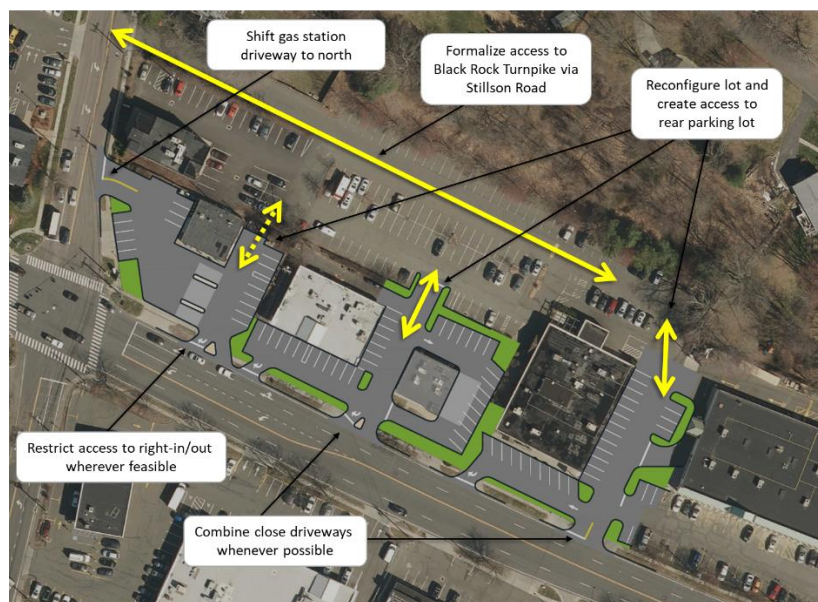
Modifications to the main access at the Turnpike Shopping Center is recommended. Observations by community members and the project team indicate queuing challenges at the intersection, even while the traffic model suggests adequate Level of Service. Direct observation and comments from the public pointed to issues with the driveway and lot design which prevents the traffic signal from operating efficiently. This is largely due to three reasons: 1) the presence of an existing raised driveway apron requiring vehicles to slow as they proceed over the apron, 2) the lack of sufficient driveway throat length which causes vehicles to spill into the intersection, and 3) the limited storage for vehicles waiting to exit the shopping center. The following figure includes some ideas for alleviating these issues.



**Figure 31: Driveway and parking lot recommendations for Turnpike Shopping Center**

The Enterprise 3 Shopping Center represents smaller parcels without direct access to a traffic signal – meaning that vehicles traveling southbound must make a left-turn onto the turnpike at one of the several unsignalized driveways in this area. Enhancing and formalizing the connections to the parking lot behind the Enterprise 3 Shopping Center and associated properties is a key recommendation for facilitating good access management on the Turnpike. Figure 32 shows some ideas for cross-property connections and access management recommendations for this series of parking lots.





**Figure 32: Driveway and parking lot recommendations for 2120 Black Rock Turnpike (Mobil) and 1968 Black Rock Turnpike (CVS)**

At Stillson Plaza, the construction of a modern roundabout would require property that would impact the number of parking spaces that are currently provided. As the roundabout is intended to significantly improve access in and out of the plaza, circulation within the parking lot should be redesigned to improve both safety and efficiency of space. In the following figure some initial ideas for reallocating parking and providing logical circulation patterns are provided for future consideration.



**Figure 33: Driveway and parking lot recommendations for Stillson Plaza**

## Recommended Concept Plan

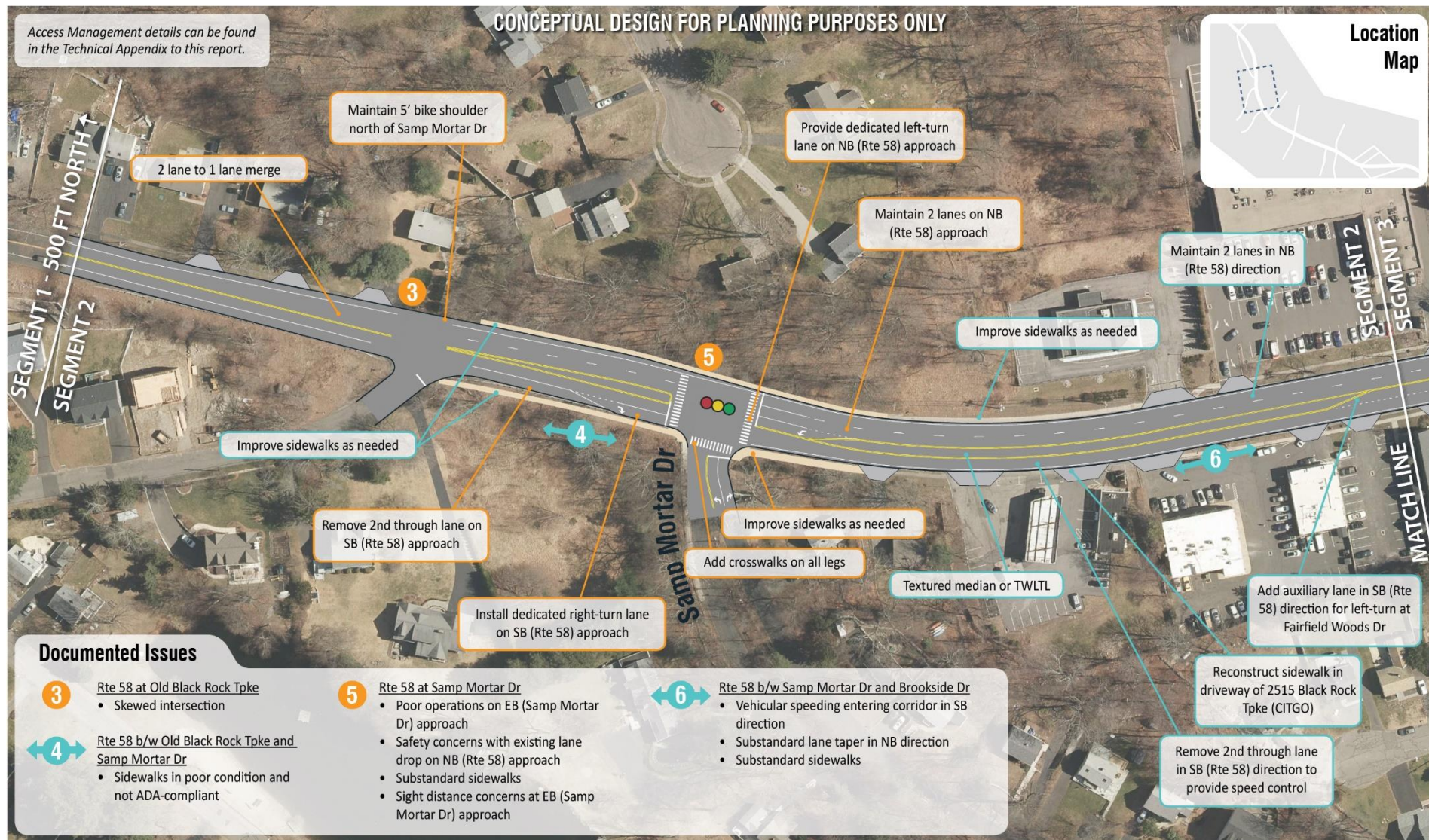
Table 2 and the corresponding figures on the following pages present the recommended corridor concept plan for Black Rock Turnpike in its entirety. The plan is drawn to scale and reflects a level of accuracy consistent with planning/pre-engineering studies. Future implementation of the recommendations will require more detailed design engineering; however, the plan that follows is sufficient for assuring general project feasibility and reasonable cost estimates.

All figures are sequential, starting at the northern end of the study area and progress south. All figures have match lines to indicate where the next image matches with the prior.



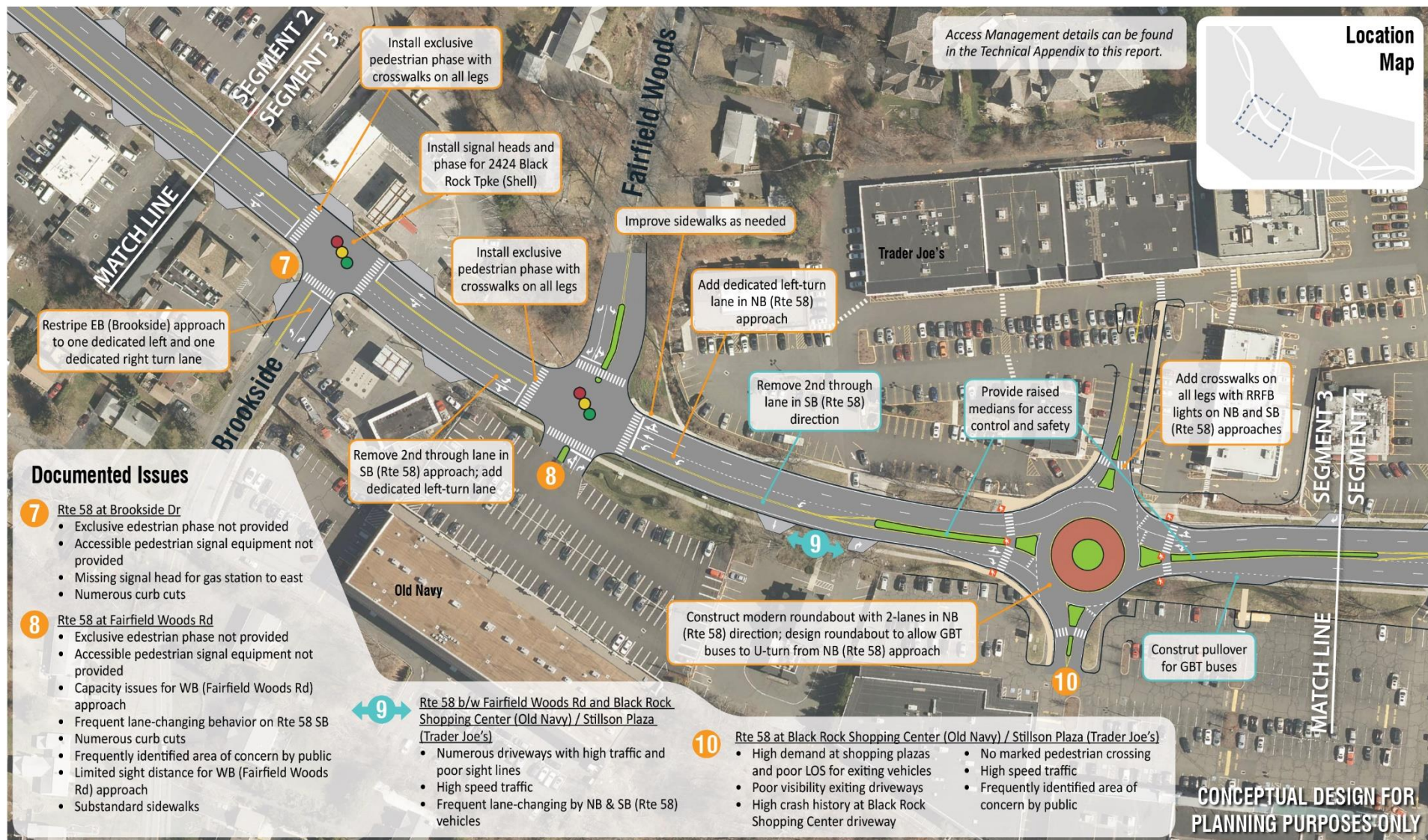






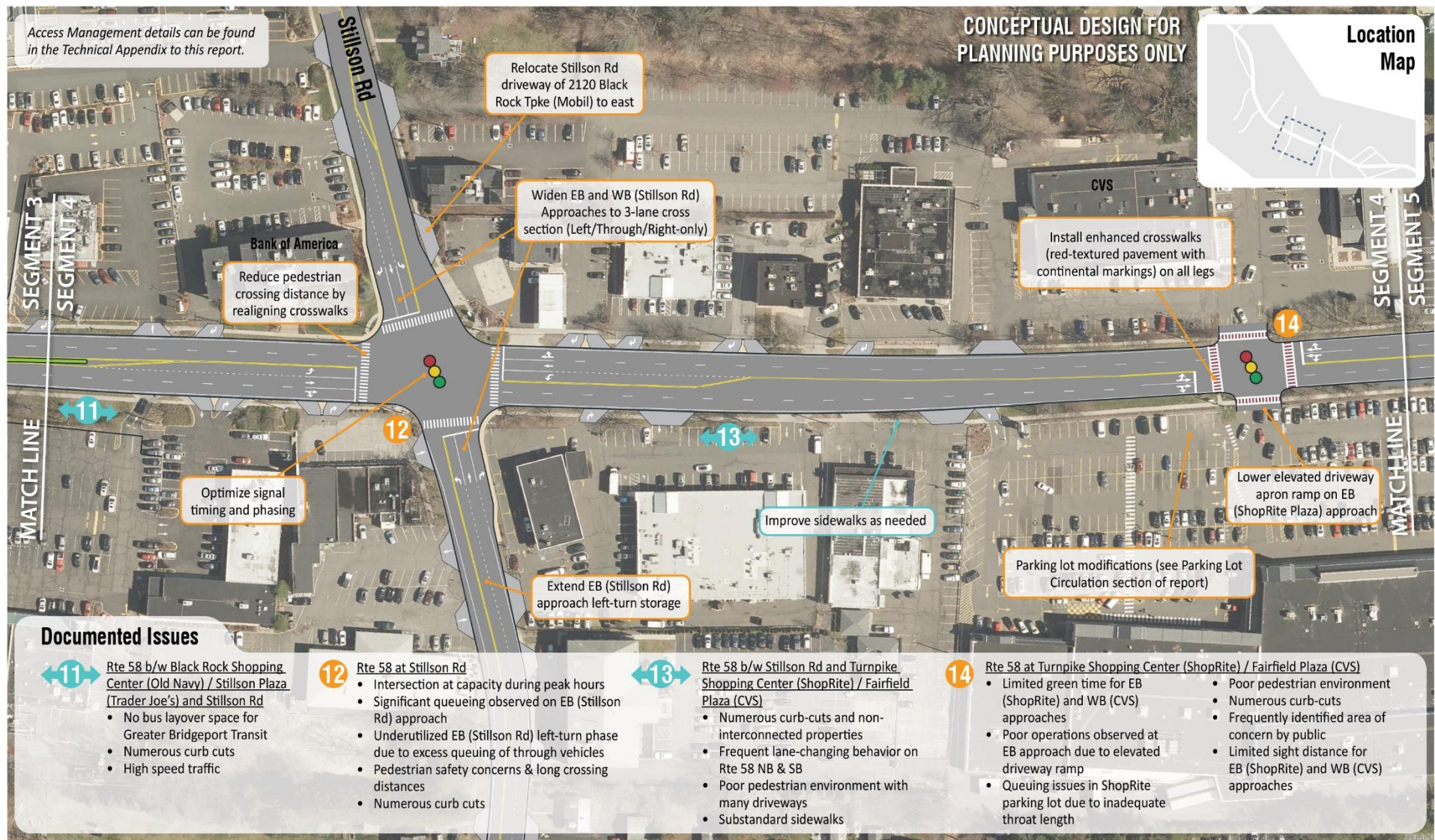
Figures 34 to 39: Recommended Concept Plan





Figures 34 to 39: Recommended Concept Plan





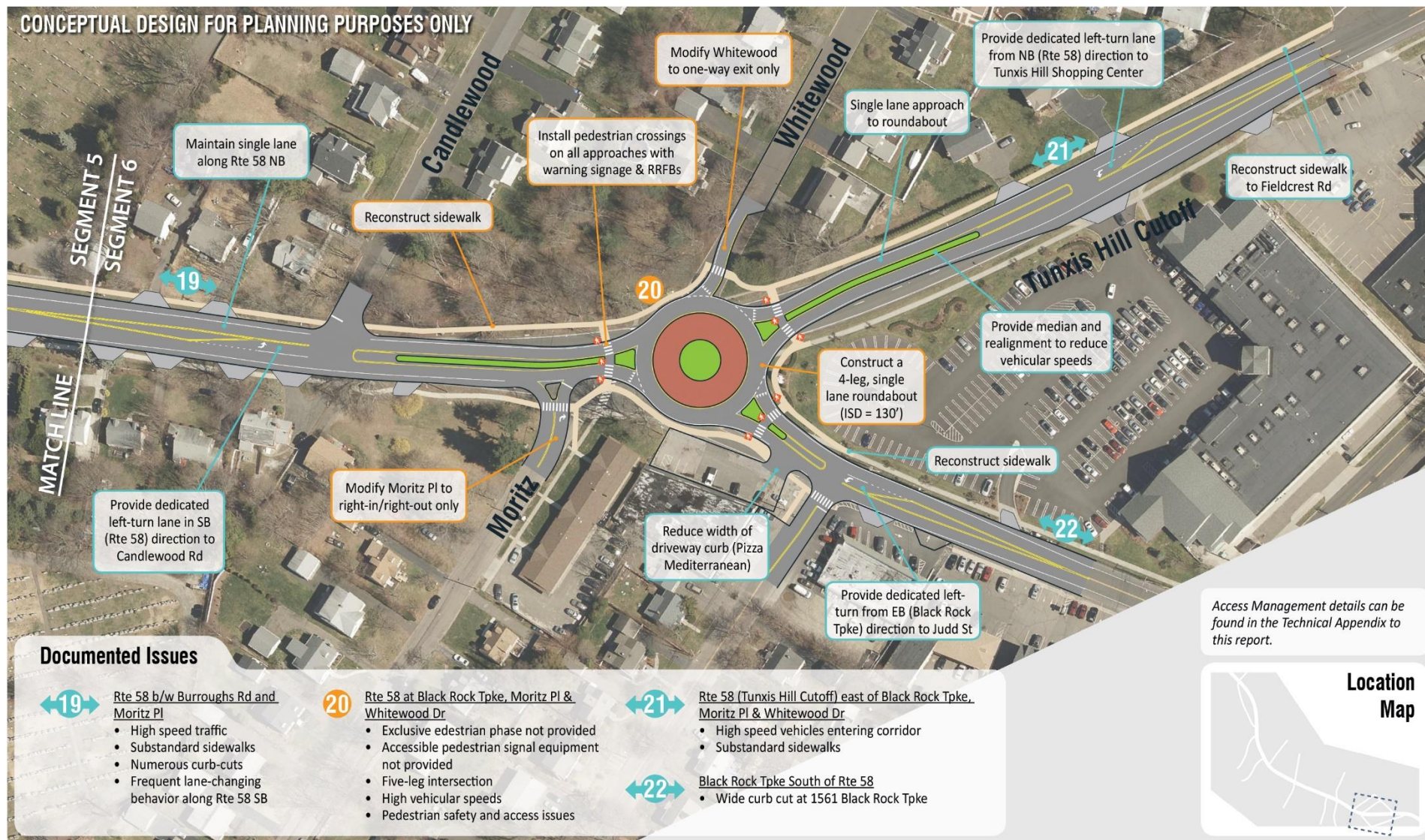
Figures 34 to 39: Recommended Concept Plan





Figures 34 to 39: Recommended Concept Plan





**Figures 34 to 39: Recommended Concept Plan**

## Near-Term Plan

The Recommended Corridor Concept Plan is a complex project overall and would likely require multiple construction seasons to complete. The entire project would need to be constructed in phases to minimize disruption to businesses and the traveling public, not to mention funding is unlikely to be obtained all at once. For these reasons, a Near-Term Plan was developed which includes several improvements from the Recommended Corridor Concept Plan that provide a high level of safety benefit for a lower overall cost. This Near-Term Plan can be considered the initial phase of the project.

The key differences between the Recommended Corridor Concept Plan and the Near-Term Plan are as follows:

- No recommendations between Tahmore Drive and Brookside Drive;
- Instead of a modern roundabout at the Black Rock Shopping Center and Stillson Plaza driveways, a raised median is included along with an enhanced pedestrian crossing;
- No dedicated right turn pockets on the Stillson Road approaches to Black Rock Turnpike.

The important elements of the Near-Term Plan are the single lane approaches to the corridor. In the southbound direction, just north of Brookside Drive, one of the two through travel lanes terminates to an exclusive left turn pocket. The single through lane extends to just north of the Stillson Avenue intersection. This recommendation is important for reducing the heavy turn conflicts at Brookside Drive and Fairfield Woods Road, and encouraging slower vehicle speeds through this segment of the corridor.

In the northbound direction, the installation of a modern roundabout at the Tunxis Hill Cutoff establishes a strong gateway feature at the

transition area between residential and commercial land uses. The roundabout improves operations at this intersection, but more importantly, allows for a single northbound lane to be carried through Katona Drive. By utilizing dedicated turn pockets and maintaining a single through lane, vehicle speeding is discouraged and risky lane changing behavior minimized. Due to the number of severe crashes in this area, several involving vulnerable users, speed control measures are highly recommended.

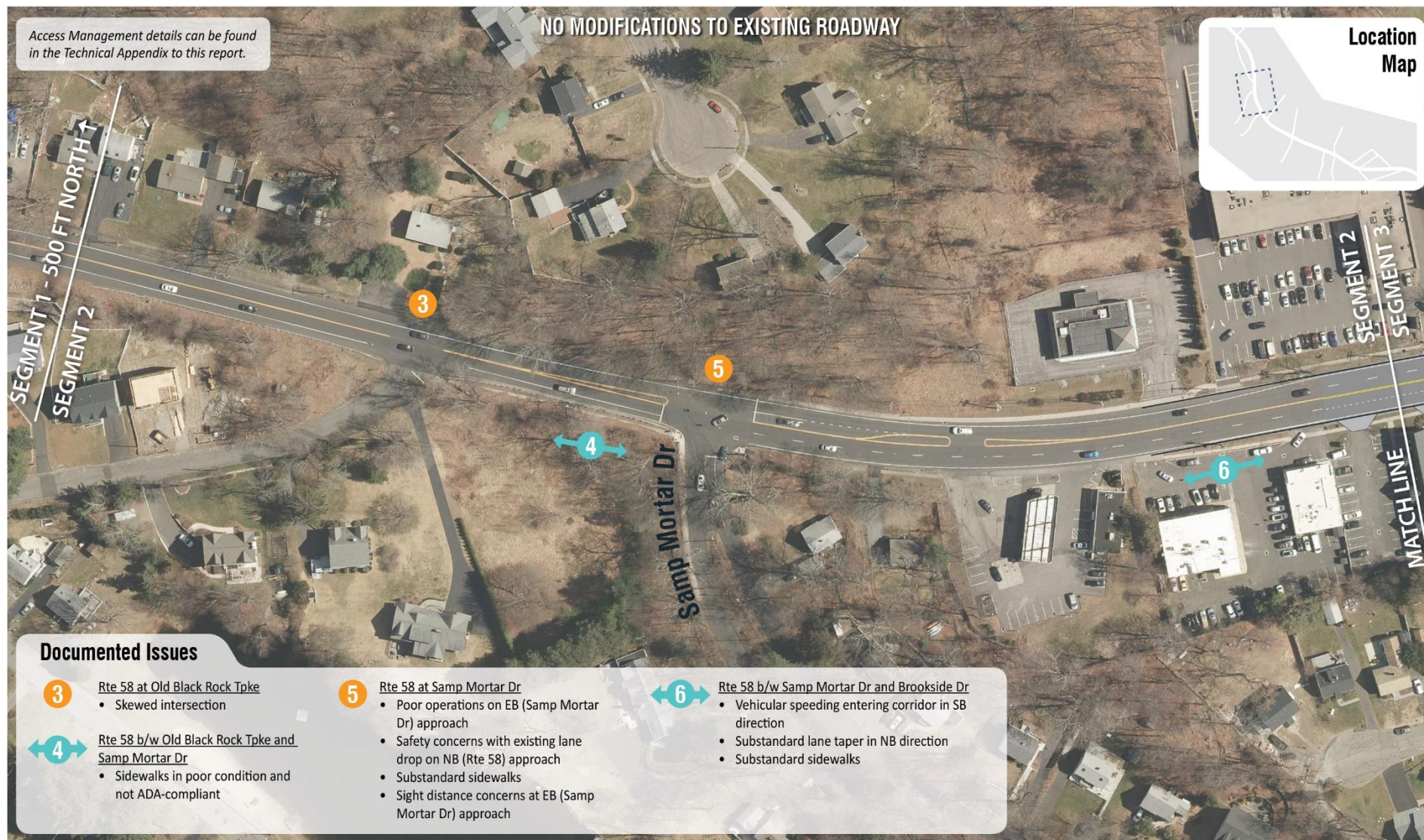
The table on the following page, and the subsequent illustrations, provide more details about the Near-Term Plan.





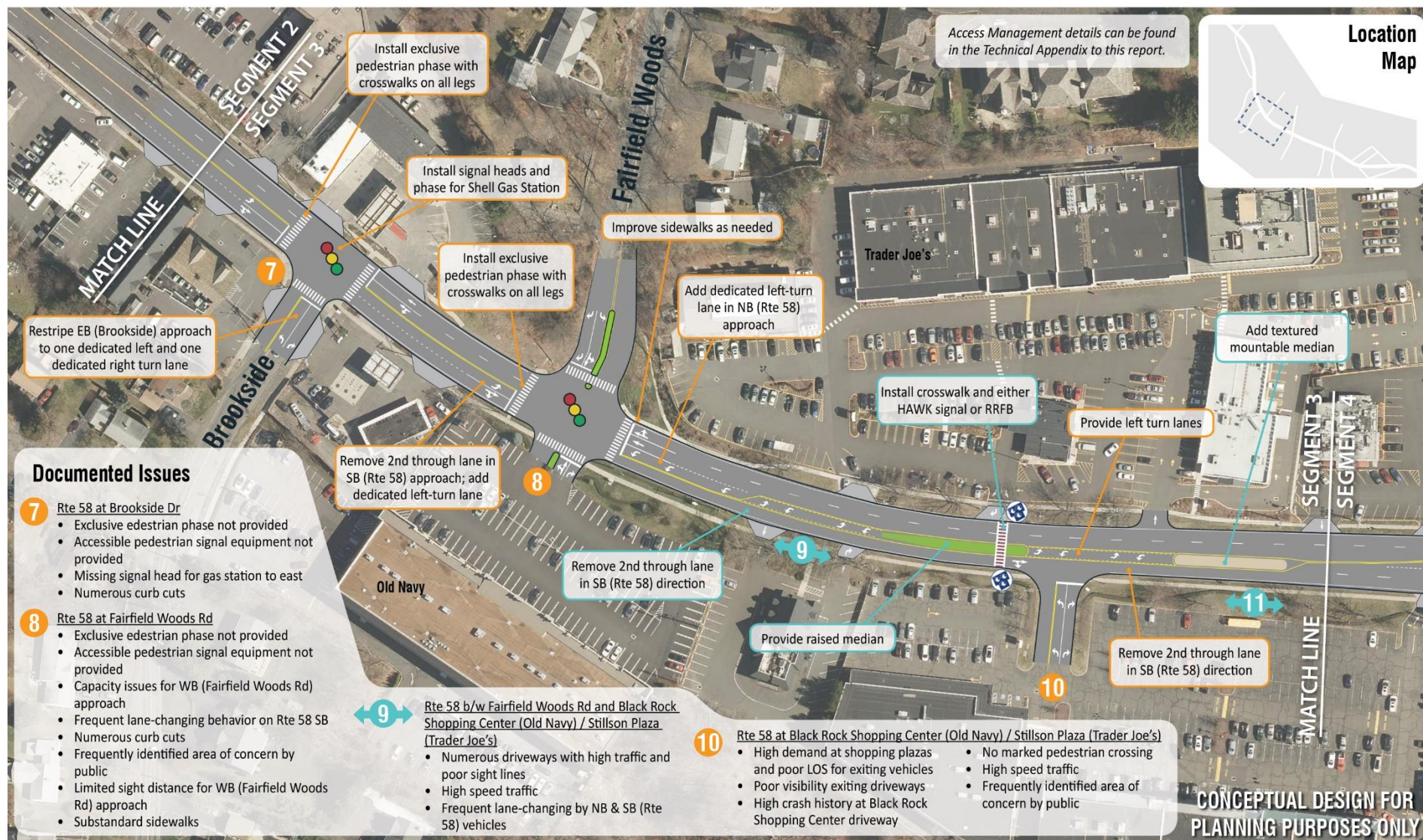
Figures 40 to 45: Near-Term Concept Plan





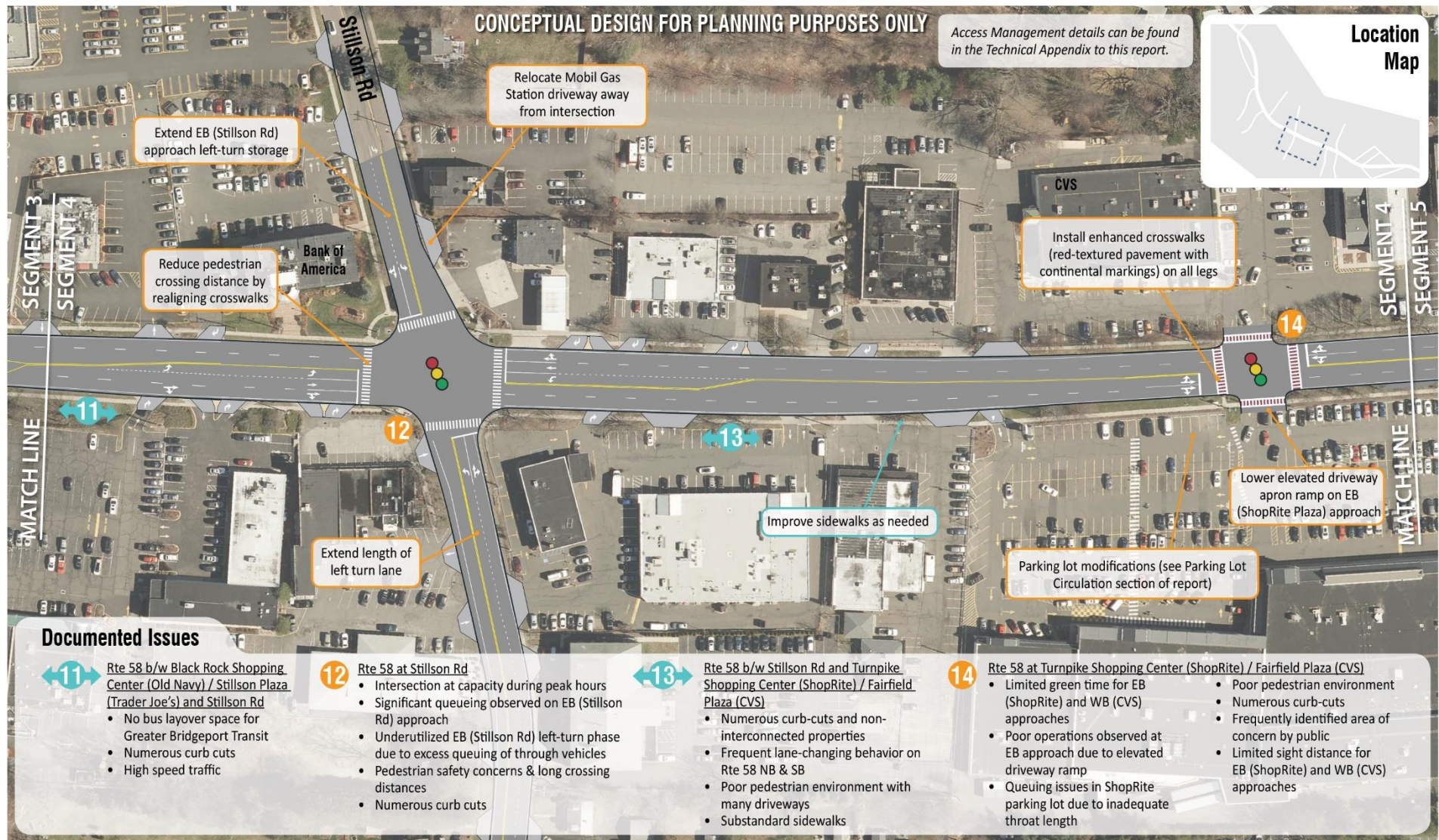
Figures 40 to 45: Near-Term Concept Plan





Figures 40 to 45: Near-Term Concept Plan





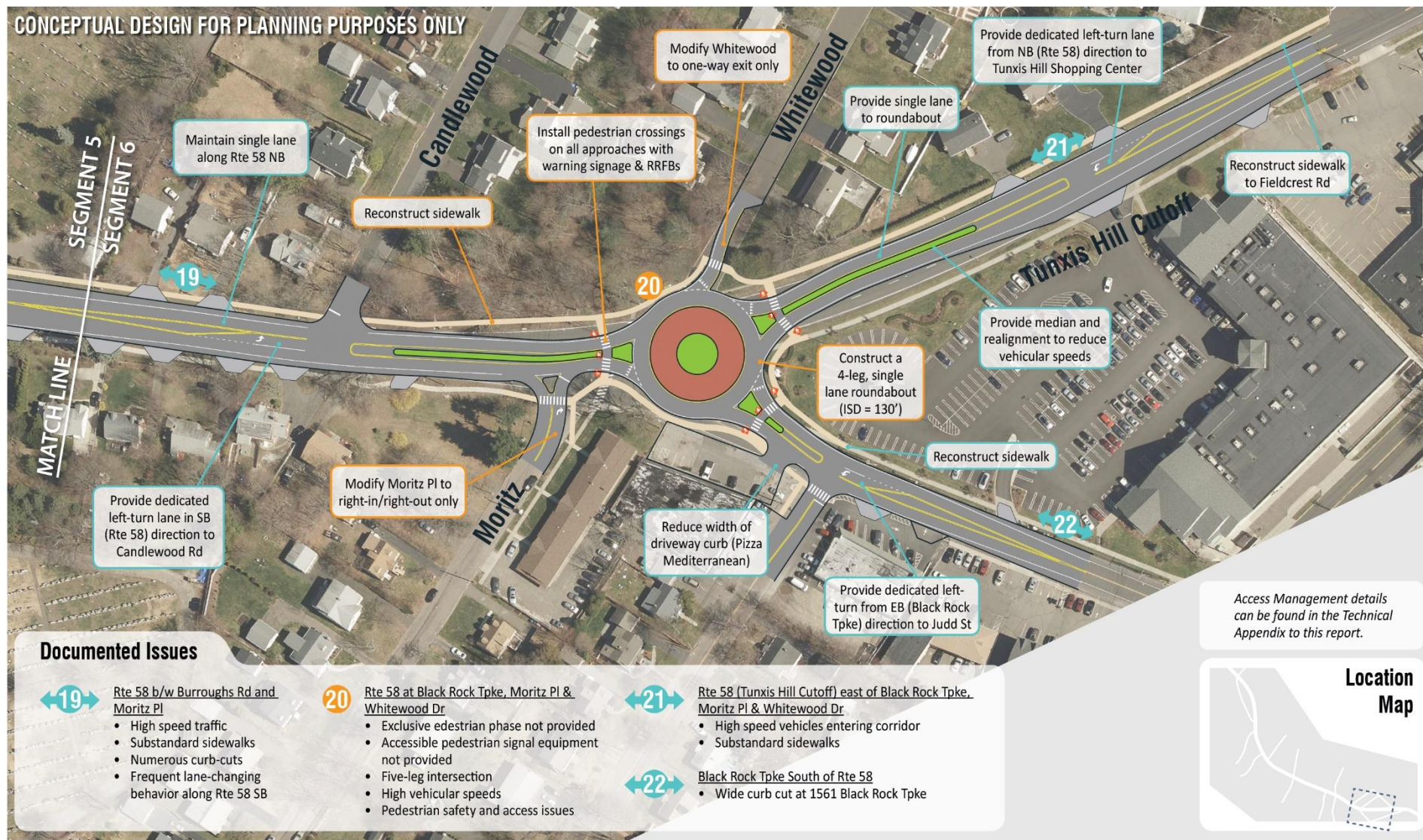
**Figures 40 to 45: Near-Term Concept Plan**





Figures 40 to 45: Near-Term Concept Plan





**Figures 40 to 45: Near-Term Concept Plan**



## 7. ANALYSIS

This chapter summarizes the traffic assessment that was performed for the Recommended Corridor Concept Plan developed for the Black Rock Turnpike Corridor Study. Detailed tables, figures, and traffic model reports can be found in Appendix D.

### Recommended Corridor Concept Plan Traffic Assessment

The Study Team analyzed the 2040 Background Traffic Volumes on a revised traffic network that reflected the conceptual improvements to the study area intersections and roadways. It incorporated extensive physical changes to the corridor as well as changes to the traffic signal settings. From a traffic capacity standpoint, the major changes are as follows:

- Modification to the lane use on the main line, side street, and driveway approaches to provide a single Black Rock Turnpike through lane where possible to calm traffic flow and increase traffic safety
- Construction of a modern roundabout at the Old Navy and Trader Joe's Plaza Driveways
- Construction of a modern roundabout at the Tunxis Hill Cutoff Intersection and realignment of Moritz Place to be a two-way stop controlled intersection
- Provide separate closed loop coordination systems on Route 58 (Black Rock Turnpike) for the intersections from Tahmore Drive to Fairfield Woods Road and from the Turnpike

Shopping Center and Fairway Plaza Driveways to Burroughs Road

- Optimization of the study area intersection splits within existing minimums
- Optimization of the intersection/network cycle lengths and associated offsets

A high-level summary of the expected traffic operations under the Recommended Corridor Concept are provided below. Improvements in the plan target capacity issues where possible, but operational efficiency is balanced with other safety benefits. The following operating conditions were identified from the analysis:

- Overall intersection LOS maintained an acceptable LOS C or better with the exception of the Black Rock Turnpike at Route 135 (Stillson Road), which operates at overall LOS D in the morning, afternoon and Saturday midday peaks.
- Movements and approaches operate acceptably at LOS D or better, with the exception of the following movements, which operate at LOS E during the identified peak hour:
  - Brookside Drive Left Turns in the afternoon
  - Fairfield Woods Road Through-Left Movements in the midday, afternoon, and Saturday midday and Fairfield Woods Road Right Turns in the afternoon and Saturday midday
  - Black Rock Turnpike at Stillson Road - Black Rock Turnpike Northbound and Southbound Left Turns in the afternoon and Saturday midday

For these specific approaches (previous page), the safety improvements and/or the optimization of the traffic signal timing for the forecasted 2040 volumes reduce the operational efficiency for these select approaches in favor of the Black Rock Turnpike main line through movements.

- Design queues for the Black Rock Turnpike Northbound Through-Right Movements at Katona Drive extend beyond available storage during the Saturday midday peak due to the reduction of a through travel lane on Black Rock Turnpike.
- In addition to the queues that extend beyond available storage, there are select movements that experience queues that are within available storage, but extend over approximately 500 feet due to the proposed improvements, including:
  - Black Rock Turnpike at Tahmore Drive – Black Rock Turnpike Southbound Approach in the morning, afternoon, and Saturday midday
  - Black Rock Turnpike at Samp Mortar Drive – Black Rock Turnpike Southbound Throughs in the afternoon and Saturday midday
  - Black Rock Turnpike at Burroughs Road – Black Rock Turnpike Northbound Through-Left in the morning, afternoon, and Saturday midday



## 8. IMPLEMENTATION PLAN

Following the initiation of a project and identification of a funding source, the remaining steps to implement an improvement will involve detailed design and construction. Based on the complexity of a project, an initial Preliminary Engineering phase may be required to conduct a more detailed engineering study and refine the concept plans and project scope. A preliminary engineering study can help establish the potential impacts to environmental and natural resources, identify potential property and utility impacts, and help refine the expected costs in current dollars rather than forecasting based on estimates reported in this Study, which are provided in current, 2018 dollars. There would also be continued public engagement throughout the design process.

Once Preliminary Engineering is complete and the decision is made to move forward with a project, final design will take place to add detail to the plan, conduct a right of way acquisition process, address utility conflicts and possible relocations, and develop construction documentation to facilitate bidding and construction of the improvements. Generally, projects that are identified as having a low level of complexity can be designed within 12-18 months from initiation of the project by the Towns. As complexity grows, so does the timeframe required to design improvements. Design phases can potentially last three years or more for highly complex projects. The following sections detail the permitting and compliance issues that will need to be incorporated during the design processes.

### Permitting and Compliance

The following sections detail the various permitting and compliance activities that need to be considered as the Study recommendations move into the design and implementation stages. Each section describes the purpose and need for the permitting/compliance

activity as well as the locations where they need to be considered. Included are sections on Environmental Permitting, Federal Funding and Preservation Compliance, Stormwater Permitting, and CTDOT Construction and Development Permitting.

#### Environmental Permitting

Improvement projects should assess natural resources within the project area study area including, but not limited to: 1) Threatened and Endangered Species and Critical Habitats, 2) Floodplains, and 3) Wetlands. Work proposed within these mapped resource areas would likely require obtaining permits from local, state, and federal regulatory entities. The environmental permits anticipated for the conceptual improvements are described in the following sections. Funding sources also play a role in which environmental permits may be required for future work.

#### *Threatened and Endangered Species and Critical Habitats*

The Threatened and Endangered Species information is available through the CTDEEP Natural Diversity Data Base (NDDDB). There is one NDDDB area mapped within the study area in the vicinity of the Mill River Crossing (NDDDB map provided in Appendix E). Improvements proposed within the mapped NDDDB areas will be required to coordinate with CTDEEP to determine what species may be affected by the project and any preventative or mitigative measures needed in the project design/schedule/approach. To request an NDDDB state listed species review, the NDDDB review request form package must be completed and submitted to CTDEEP. NDDDB mapping is updated on an annual basis, so projects should be re-screened if they move forward in the future. As such, the improvements to the Black Rock Turnpike at Tahmore Drive may require a NDDDB review request.

Preparation of a NDDB form submittal is estimated to take approximately two weeks, with an estimated agency review time of one to three months.

### *Floodplains*

Floodplains are limited to the areas adjacent to and feeding the Mill River in the northern end of the study area (Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) maps provided in Appendix E). Improvements proposed within the mapped floodway and 100-year floodplains will be required to obtain a Flood Management Certification approval. Areas of 500-year floodplain also exist within the study area, and these will need to be considered during design and permitting. It is assumed that since the work is proposed on state roadways, that state funding would be used, and the applicant for permits would be CTDOT. Depending upon the impacts and extent of the work, this permit could be a CTDEEP Individual Flood Management Certification or CTDOT Flood Management General Certification (CTDOT applicant and minimal impacts). Based upon a review of the mapping, only the improvements to the Black Rock Turnpike at Tahmore Drive intersection may require floodplain permitting.

Preparation of a Flood Management permit package is estimated to take approximately six weeks, with an estimated agency review time of four to six months. If CTDOT is the permit applicant, there would be no municipal floodplains permits required.

### *Wetlands*

There are mapped wetlands surrounding the Mill River as described in the Floodplains section above and along smaller streams, ponds, and wet areas within the study area. To determine if a project requires a wetlands permit, wetlands must be delineated in the field by a professional soil scientist, as well as waterbodies and watercourses. For purposes of this study, concepts within mapped

wetland areas, waterbodies or watercourses have been identified as having the potential for wetland permitting needs.

Based upon the review of the study area, it is expected that only the improvements to the Black Rock Turnpike and Tahmore Drive intersection may require wetlands permitting and impact to the wetlands is likely to be limited. In addition, it is unlikely that the wetlands located to the north and west of Katona Drive Extension and Burroughs Road and those located northwest of the Black Rock Turnpike and Samp Mortar Drive intersection will be impacted by the proposed improvements. Notwithstanding, the following is provided to give a general overview of wetlands permitting requirements should any wetlands be impacted by the proposed improvements.

Improvements proposed within the mapped wetland resource areas have the potential to be required to obtain an Inlands Wetlands and Watercourses permit through CTDEEP. If there are activities that alter or fill wetlands or watercourses, a United States Army Corps. of Engineers (USACE) Section 404 permit would be required. Generally, for USACE Section 404 approval, if impacts are less than 5,000 square feet (sf), then submitting a Self-Verification (SV) form to USACE would be needed. If impacts are greater than 5,000 sf and less than one acre, then a Pre-Construction Notification (PCN) would be needed. If the extent of the work within wetlands and watercourses causes greater impacts than one acre, an individual Section 404 permit would be required. Authorization would likely be through General Permit (GP) No. 18, however, if authorization under a different GP was required, then thresholds may be different than those outlined above.

In addition to the USACE Section 404 permit, a Water Quality Certification (WQC) approval under Section 401 of the Federal Clean Water Act would be needed. If authorization under GP 18 is sought, WQC approval would be granted as part of the SV approval process, if SV applies to the project. If the PCN is being sought and the project



has under 0.5 acres of impact, the CTDEEP Connecticut Addendum Army Corps of Engineers General Permit State of CT (CT Addendum) would be required for the WQC. If impacts are over 0.5 acres, an individual WQC through CTDEEP would be required. If USACE Section 404 approval were through a GP other than GP 18, then Section 401 WQC thresholds may change. If a USACE Section 404 permit is needed, the CTDEEP General Permit for Water Resource Construction Activities will also apply if the project has under one acre of wetland and watercourse impacts.

If CTDOT is the permit applicant, there would be no municipal wetlands permits required, as CTDOT coordinates with the municipalities during the design process.

Preparation of the SV form submittal is estimated to take approximately two weeks, with no agency review time. Preparation of the PCN, General Permit for Water Resource Construction Activities permit, and/or CT Addendum packages are estimated to take approximately six weeks, with an estimated agency review time of four to six months. Preparation of Individual USACE and/or Individual WQC permit packages are estimated to take approximately twelve weeks, with an estimated agency review time of eight to twelve months.

### Federal Funding and Preservation Compliance

Depending upon the funding source for projects, federal and/or state-level environmental documentation would be required. If federal funding is used, and if impacts are minimal, a Categorical Exclusion (CE) would likely satisfy the federal requirements. If the project has federal funding and greater impacts are anticipated, then the preparation of an Environmental Assessment (EA) may be necessary. If state funding is involved, to satisfy Connecticut Environmental Policy Act (CEPA) state environmental documentation requirements, a Post Scoping Notice or an Environmental Impact

Evaluation (EIE) would be required. As the project advances into conceptual design and additional project details are known, a determination should be made about the applicability of NEPA and CEPA and the proper class of documentation. Opportunities for streamlining the environmental documentation process should be used, if available (e.g., preparation of a combined NEPA/CEPA document).

If federal funds are used for the improvements, the project would be subject to Section 4(f) of the US Department of Transportation Act to determine if the improvements would have any impact to publicly-owned public parks, recreation areas, and wildlife or waterfowl refuges, or any publicly or privately-owned historic site listed or eligible for listing on the National Register of Historic Places. Similarly, Section 106 of the National Historic Preservation Act requires that federal agencies consider the effects of their actions on properties listed in, or eligible for listing in, the National Register of Historic Places. A review shows that Whitewood Knoll is the only park located within the study area and there are no listed sites on the National Register of Historic Places or within the Town of Fairfield list of Historic Properties. As such, the improvements to the Black Rock Turnpike at Tunxis Hill Cutoff, Moritz Place, and Whitewood Drive may require a review for compliance with Section 4(f). As the improvements are advanced into conceptual design and additional project details are known an assessment should be undertaken to determine what documentation is required in order to comply with Section 4(f) of the US Department of Transportation Act and consultation should be conducted with the CT State Historic Preservation Office to determine if there will be any impacts to historic places.

### Stormwater Permitting

It is unknown which concepts and segments will be constructed together, however if the soil disturbance proposed for a project is

over one acre, a CTDEEP General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (Stormwater GP) would be required. With CTDOT as the applicant, this project would be classified as a locally exempt project. Any concepts that require the Stormwater GP, even if located outside of a mapped NDDDB area, must also request the NDDDB review and include the CTDEEP response in the stormwater permit package.

Preparation of the Stormwater GP package is estimated to take approximately six weeks. This permit filing must be submitted to CTDEEP 60 days before the start of construction if the soil disturbance area is between one and twenty acres. If the project's soil disturbance is greater than 20 acres, the permit should be submitted 90 days before the start of construction. CTDEEP has the 60- or 90-day timeframe to review the filing and provide any feedback to the applicant.

If CTDOT is the permit applicant, there would be no municipal stormwater permits required. If soil disturbance for the project is less than one acre, and a CTDEEP wetlands permit is required, no municipal stormwater permits would be needed.

#### *CTDOT Improvement Construction & Development Permitting*

In addition to the permitting for natural resources, CTDOT will require permits for developments and construction of improvements within the State right-of-way for Municipal roadway improvements and driveways to developments that are not included within the scope of a CTDOT project. The permits include encroachment permits and signal revision permits for any Municipal roadway and development driveway improvements and Office of State Traffic Administration (OSTA) permits for revisions to large developments that exceed the OSTA size limits and or those that are currently certified by OSTA. Depending on the scope of the work and the entity,

the Municipality or a private developer performing the design, funding for the permits may come from public and/or private resources.

## Construction & Opinions of Probable Construction Cost

Following the completion of the design phase, the projects will begin the construction phase. The steps involved in a publicly funded project include advertisement for bids to contractors, collecting bids on the work and awarding the contract, and finally conducting the construction to build the improvement. Utility relocations typically take place during construction, but in some instances a utility company may relocate facilities in advance of a project taking place once a utility agreement is in place. Generally, smaller projects are completed within one construction season between March and November. Larger projects can span several construction seasons depending on the complexity of the work, the construction staging and phasing needed to facilitate the maintenance and protection of traffic operations during construction, and possibly the availability of funding. Projects identified as having Moderate Complexity can be expected to take up to two construction seasons and highly complex projects could take more than two construction seasons to build.

To assist in the budgeting of funding for the improvements, opinions of preliminary probable construction costs (OPC) were developed for the Recommended Corridor Concept. The preliminary costs have been estimated following the guidelines published by the CTDOT and are presented in 2019 dollars. Project costs may require inflation factors looking out into the future to determine actual funding needs for funding programming. The "Preliminary Cost Estimating Guidelines" provide unit costs and percentage based lump sum costs to facilitate the estimation of project costs at the Preliminary



Engineering level of project development. The approximate project costs presented in this Study are limited to the construction item costs and exclude costs related to rights of way actions and environmental remediation, and engineering. The estimates include contingency (25%) and incidentals (25%) in the total opinion of probable costs.

As shown in Table 4 below, the improvements outlined in the Recommended Corridor Concept are estimated to cost approximately \$23.1 million to construct. Table 5 lists the estimate costs for the Near-term Plan, which comes to about \$10.1 million. The tables also present estimated construction costs for each intersection area to allow for estimates for projects including multiple intersections. The full OPC for each intersection including items, quantities, and unit costs are provided in Appendix F.

**TABLE 4**

Opinion of Probable Construction Cost Summary – Recommended Corridor Concept

| Intersection                                                       | Opinion of Probable Construction Cost |
|--------------------------------------------------------------------|---------------------------------------|
| 1 Black Rock Turnpike at Tahmore Drive & Old Black Rock Turnpike   | \$360,000                             |
| 2 Black Rock Turnpike at Samp Mortar Drive                         | \$2,273,000                           |
| 3 Black Rock Turnpike at Brookside Drive and Fairfield Woods Road  | \$2,288,000                           |
| 4 Black Rock Turnpike at Lake Hills & Black Rock Shopping Centers  | \$3,817,000                           |
| 5 Black Rock Turnpike at Route 135 (Stillson Road) & Stillson Road | \$2,327,000                           |
| 6 Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza  | \$1,139,000                           |
| 7 Black Rock Turnpike at Katona Drive & Katona Drive Extension     | \$3,523,000                           |

|                                                                                    |                     |
|------------------------------------------------------------------------------------|---------------------|
| 8 Black Rock Turnpike at Burroughs Road                                            | \$2,675,000         |
| 9 Black Rock Turnpike at Tunxis Hill Cutoff, Route 732, Mortiz Pl. & Whitewood Rd. | \$4,746,000         |
| <b>Total</b>                                                                       | <b>\$23,148,000</b> |

**TABLE 5**

Opinion of Probable Construction Cost Summary – Near-Term Concept

| Intersection                                                                       | Opinion of Probable Construction Cost |
|------------------------------------------------------------------------------------|---------------------------------------|
| 1 Black Rock Turnpike at Tahmore Drive & Old Black Rock Turnpike                   | \$360,000                             |
| 2 Black Rock Turnpike at Samp Mortar Drive                                         | \$0                                   |
| 3 Black Rock Turnpike at Brookside Drive and Fairfield Woods Road                  | \$1,471,000                           |
| 4 Black Rock Turnpike at Lake Hills & Black Rock Shopping Centers                  | \$967,000                             |
| 5 Black Rock Turnpike at Route 135 (Stillson Road) & Stillson Road                 | \$330,000                             |
| 6 Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza                  | \$521,000                             |
| 7 Black Rock Turnpike at Katona Drive & Katona Drive Extension                     | \$942,000                             |
| 8 Black Rock Turnpike at Burroughs Road                                            | \$761,000                             |
| 9 Black Rock Turnpike at Tunxis Hill Cutoff, Route 732, Mortiz Pl. & Whitewood Rd. | \$4,746,000                           |
| <b>Total</b>                                                                       | <b>\$10,098,000</b>                   |

## BLACK ROCK TURNPIKE SAFETY STUDY

### FINAL REPORT

# TECHNICAL APPENDIX

**APPENDIX A: STAKEHOLDER AND PUBLIC COMMENTS**

**APPENDIX B: PRELIMINARY CONCEPT PLAN**

**APPENDIX C: ACCESS MANAGEMENT RECOMMENDATIONS**

**APPENDIX D: TRAFFIC ANALYSIS**

**APPENDIX E: PERMITTING MAPS**

**APPENDIX F: ORDER OF MAGNITUDE COST ESTIMATES**

MAY 2019



## BLACK ROCK TURNPIKE SAFETY STUDY

# APPENDIX A: STAKEHOLDER AND PUBLIC COMMENTS

MAY 2019

## Public Comments on Improvement Options

| # | Comment:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | We need a traffic light at the intersection of BRT and Nonopoge Road.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 2 | Left Turns: prohibit Left turns except at intersections.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 3 | We need a traffic light at BRT and Nonopoge Road                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 4 | Hello, I support the proposed plans and encourage any change that will make the Black Rock Turnpike safer for pedestrians. We live in walking distance of the stores and would love the addition of crosswalks.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 5 | <p>Hi, I attended the presentation on Nov. 5th. I thought everyone that presented did a thorough, informative easy to understand presentation.</p> <p>I've lived in Fairfield for 26 years. I work locally and crossover Black Rock Tpke/Stillson road daily. I frequently shop and visit many merchants.</p> <p>I do not agree with installing roundabouts on Black Rock Tpke. I have many concerns:</p> <p>Having crosswalks without traffic signals is unsafe for pedestrians to cross such a high traffic roadway. It will also frustrate drivers as some pedestrians mistakenly believe they have the right away.</p> <p>I also feel that the confusion with the roundabouts will push traffic onto the side roads.</p> <p>I do not believe Roundabouts belong on such a busy roadway. I can't imagine senior and new drivers figuring out this new way.</p> <p>Many will avoid shopping/traveling in this area.</p> <p>They do not fit in our community.</p> <p>Cost of the roundabouts. Who will pay for all of this?</p> <p>There's a roundabout in Riverhead, NY that I believe will be similar to the proposed Black Rock Tpke ones. We found it to be very confusing, and scary when you pull in. Busy roadway, similar to Black Rock tpke.</p> <p>thanks for your time</p> |
| 6 | Thank you but you can take me off your email list....I hope to move soon so no more interest in this. No way bike riding will ever happen around there as so dangerous.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 7 | <p>The left hand turn from Tunxis Hill to South Bound Black Rock turnpike is terrible. Why not put a proper intersection light system there. A round about is a horrible idea due to the volume and size of the vehicles on that road.</p> <p>The circle near Staples is pitiful and has probably lead to millions of dollars in insurance claims. Someone should research the amt of insurance \$ spent here each year. I don't know what kind of engineers you hire, but the new lines are worse than the others, they creat lanes that come from nowhere and end nowhere. It is an extremely dangerous free-for-all.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 8 | People in Fairfield don't care much about Black Rock, which is Bridgeport.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |



|        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9      | <p>Thank you for your work on this project. The team clearly developed thoughtful recommendations on this challenging major roadway in town. I was not at the latest presentation, but I have reviewed the materials on the website.</p> <p>In the past, I had always believed I'd rather not live near BRT and as a result, have to use that roadway for goods and services. Alas, I do now reside in the Stratfield area of town and find myself navigating BRT regularly.</p> <p>I am in favor in general of several of the proposed recommendations. The areas where medians and better pavement markings are proposed to direct traffic flow and turning opportunities, combined with closing of a number of curb cuts/driveway openings, I believe would be a vast improvement over existing conditions. I believe the roundabouts are also the right approach. They offer traffic calming measures, improvements for pedestrians, and better traffic flow.</p> <p>The roundabout at Tunxis Hill Cutoff would seem to be a "no-brainer" as it will clean up a rather unusual intersection with traffic approaching from many different directions. The other two proposed roundabout areas, while perhaps more difficult to develop due to private property encroachments, also seem to be big improvements over existing conditions.</p>                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 9-cont | <p>Was a roundabout considered for the Burroughs intersection? As you are aware, that has been a particularly unsafe intersection, in part due to the grade change, low visibility to the east, and speed of motorists.</p> <p>For pedestrian improvements, more and better crosswalks are a must as indicated in your proposal. I did not see recommendations regarding proposed sidewalk widths and adding new sidewalks where appropriate. Hopefully, more can be considered.</p> <p>Also, while I understand the survey results suggest an unfriendliness towards bicycles, I do believe it is important to make improvements that factor in cyclists. Cyclists, at the moment, simply avoid BRT, and with good reason. A better designed roadway should be safer for cyclists. Also, considerations for cyclists to cross BRT should be factored in. There is a new bike route that crosses BRT at Burroughs and there could be future routes that either cross BRT or use part of BRT on the route (I am currently a member of the Fairfield Bicycle and Pedestrian Committee, although admittedly I am not much of a cyclist myself).</p> <p>Additionally, I did not notice many improvements for transit riders, except for the pull-out near Old Navy. Were other improvements specifically for transit riders considered and determined not necessary? Better placement of bus stops, better shelters perhaps?</p> <p>Lastly, you have probably been made aware of a recently approved Complete Streets Policy in town, but if not, it can be found at <a href="https://www.fairfieldct.org/news/?FeedID=2356">https://www.fairfieldct.org/news/?FeedID=2356</a>. This study certainly aligns with the Policy.</p> <p>Thank you for all of your efforts.</p> |

|           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10        | <p>I support the recommendations of this study as best I understand them. The analysis of the traffic and access problems for Black Rock Turnpike was well defined and logical. The proposed solutions seem to be innovative and reasonable. The solutions will better manage traffic flow on Black Rock Turnpike and will increase safety for drivers and pedestrians.</p> <p>However, the final presentation was not handled well and has left many questions. The primary area of concern is implementation. How this project would best be phased, what the priority elements are, the implications for implementing some but not all the elements of the plan were not presented in sufficient detail. Costs for phasing, how many years would be required for implementation, what traffic would look like during construction and other elements have not been presented to the community.</p> <p>I could not locate the "Realignment Scenarios Report, including conceptual plans for each improvement" that would be a useful resource for public evaluation of the recommendations.</p> <p>There was too much detail about the recommendations in the November 5 public meeting without sufficient time for questions and discussion from the public. At this point, there are many un-and-under answered questions, and there seemed to be unease amongst members of the public who were presented with an intricate plan without the ability to digest and comment on all its elements. Lack of attention to implementation left the clear impression that this is "just another study that will be filed away," as someone commented after the meeting.</p> <p>This project started out with a real effort to build community support via the survey, the Community Advisory Committee, and the efforts made to include the views of property owners and business operators on Black Rock Turnpike. The energy expended in developing a consensus in favor of the project appears to have dissipated based on the performance of the session presenting the findings to the public.</p> |
| 10 - cont | <p>A condensed version of the findings including a proposed implementation plan should be presented with a longer period for public comment and discussion at the end of the presentation. A presentation should also be made before the RTM with the Board of Finance and other relevant bodies asked to attend. If there is a real desire to implement this plan, a great deal more organized and focused outreach needs to occur.</p> <p>One area of the plan that does not appear to have received much consideration is mass transit. New bus shelters were noted, but should there be additional mass transit considerations? For instance, if people tend to visit more than one store when they go to Black Rock Turnpike, would a trolley that shuttles people to and fro along Black Rock Turnpike be useful? (Perhaps a commuter-like parking lot at the upper end of Black Rock Turnpike that would allow people to park and take a trolley would be useful.) Considering the heavy flow of traffic to and from Black Rock Turnpike in both directions on Stillson Road, would a shuttle from the Post Road to Black Rock Turnpike be useful and act as a low traffic link between the Town's two major commercial centers?</p> <p>In general, the issue of reducing traffic on Black Rock Turnpike does not appear to have been considered in any detail, a fact noted among members of the public after the November 5 meeting.</p> <p>Despite my concerns, the Black Rock Turnpike study reflects a great deal of highly professional and much appreciated work by the consultants and by Town staff.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |



|           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11        | <p>In general, I thought the recommendations were well thought out and desirable. I like all three roundabout ideas, particularly the two at Tunxis Hill and in front of Trader Joe's. Tunxis Hill will be helpful to reduce the speed entering the zone while at Trader Joe's there will be a speed reduction along that stretch of road and a significant reduction in left turns. The one problem area is the intersection in front of CVS and Shop Rite. I just doesn't work for everyone, pedestrians and left turning vehicles out of the parking lots, in particular. I'm not smart enough to suggest a workable alternative and hope you can come up with one.</p>                                                                                                                                                                                                                                                                                                                                                                                                   |
| 12        | <p>Basically... NO roundabouts.</p> <p>With the Town continually granting developments that will add horrendous traffic, you're beating a dead horse. Parking is becoming non-existent.</p> <p>My recommendation... Police presence and tell the Town to STOP creating traffic.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 13        | <p>Short term - lower cost - less disruptions</p> <p>Implement proposed pedestrian improvements</p> <p>Use Smart flashing red light to assist ped crossings</p> <p>Use Smart traffic signals. Add vehicle activated trips where advantageous</p> <p>Keep as much two lanes as possible for emergency vehicles.</p> <p>Drivers do not pull over fast enough now and with only one lane and no way to get around could be disastrous Car 3, Engine 2 and Ladder 2 use BRT as main route to Merritt Pkwy</p> <p>Section #1 Leave as is. Works now. Possibly add trips to both lanes northbound BRT</p> <p>Section #2 At Burroughs Rd on BRT add delayed left turn arrow southbound Use trips on both sides of Burroughs</p> <p>At Katona use trip on Katona Change left turn arrow to delayed northbound.</p> <p>Section #3 At SR and CVS Change current left turn arrow to delayed</p> <p>Add left turn arrow to enter SR</p> <p>Section #4 Stillson Leave alon. Works now.</p> <p>Section #5 Add GBT bus pull out. Change GBT RT 10 to use Stillson, Fairfield Woods, BRT</p> |
| 13 - cont | <p>Section #6 Fairfield Woods use delayed left turn arrow northbound, add delayed left turn arrow into Shopping Ctr</p> <p>Brookside use delayed left turn arrow</p> <p>Section #7 Samp Mortar Use trip on Samp Mortar</p> <p>Roundabouts may be used in future years if private businesses change and driveways get reconfigured, but that won't happen in short term.</p> <p>I would be happy to explain any of these comments since I am typing this with only minutes before your deadline for submission. and don't have time to really justify these item as well as other ideas I have.</p> <p>I have live within two blocks of BRT for forty years and have watched it develop.</p> <p>Thanks,</p>                                                                                                                                                                                                                                                                                                                                                                   |

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14 | <p>Dear Black Rock Turnpike Safety Study Team,</p> <p>So sorry I missed the 11/19 deadline. Even though I am late, please consider these easy-to-implement suggestions:</p> <ol style="list-style-type: none"> <li>1. Plant trees in all median dividers (as trees also help to slow traffic and beautify).</li> <li>2. Install public art and green-scaping to each roundabout (for both beautification and placemaking).</li> </ol> <p>Thank you for all of your hard work! Your proposed improvements will make this scary area much safer and more amenable to pedestrians.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 15 | <p>Comments:</p> <ul style="list-style-type: none"> <li>* this study did a great job of community engagement,</li> <li>* phased implementation of recommendations seems very logical,</li> <li>* the study notes that the Greater Bridgeport Transit route is primarily used as a “destination,” but the study utterly fails to look at enhanced mass transit assets that might help mitigate Black Rock Turnpike congestion. A wheeled trolley service along Black Rock Turnpike starting and ending at parking lots at both “ends” of Black Rock Turnpike would enhance pedestrian safety since pedestrians could jump on and off at their desired destinations. This trolley service would also reduce vehicle traffic on Black Rock Turnpike. A second trolley that originated and terminated on the Post Road in Fairfield center would bring shoppers to and from Black Rock Turnpike. Some Fairfield residents who live in the southern part of Town hesitate to shop on Black Rock Turnpike due to traffic concerns. A trolley service would likely increase shoppers from the southern part of Fairfield to Black Rock Turnpike. Trolleys could provide transportation for bicycles. Distinctive trolleys would be a marketing asset as they are in many other towns and cities. Trolleys could be funded by a modest ridership fee, commercial sponsors, and federal grants.</li> </ul> |



# Stakeholder Comments on Preliminary Concept Plan

## Initial CTDOT comments on Preliminary Concept Plan

- DOT asks if we will have other speed reduction techniques besides roundabout- possibly more landscape medians (south of Burroughs and perhaps at entrance near Samp Mortar)
- Consider HAWK at mid-block crossing
- Consider truck movements to Dunkin, CVS and other plazas
- Consider turn pockets or other treatment to keep traffic moving at Burroughs
- Add left turn out between CVS and Bear & Grill
- Diagram how left turn traffic will work
- Make sure pedestrians are accommodated throughout

## Kleban Properties meeting 1189 Post Road, Fairfield, CT 9:00 AM – 11:00 AM

### Attending:

Ken Kleban, Evan Kleban, Deborah Koba - Kleban Properties

Matt Fulda, Meghan Sloan – Metro COG

Mark Barnhart, Jim Wendt – Town of Fairfield

Parker Sorenson, Mike Morehouse - FHI

- No comments on Tunxis Hill Roundabout
- ShopRite / CVS Area
  - Concern for exiting traffic to Black Rock Southbound
  - Concerns for queueing space for left-turning vehicles
  - Concern for access to bakery property and convenience uses for northbound vehicles on Black rock
  - Concern for access to ShopRite property for semi-trucks from I-95 from the south and need to use driveway near bakery
  - Like the concept for a reorganized parking lot with clearer aisles
  - Would like team to look into connecting ShopRite properties to properties to the north (towards Stillson Rd)
- Old Navy/ Trader Joe's Area
  - Like the concept for a roundabout to serve both these driveways (stated approval three times +)
- FFW / Brookside area
  - Concern for removal of FFW Driveway
- General:
  - Concern for emergency response – note that AMR Ambulance sits at Stillson near gas station
  - Tenants don't like occlusive bus shelters – but may be more amenable to sideless shelter
  - Would like to see more connections between properties in general

## Meeting with the First Selectman (Mike Tetreau) and his Chief of Staff

- Concern for ADA & crossings at locations that do not have signal control, especially at the roundabouts. He had concern that vehicles would not yield and have concern for the elderly citizens.
- Question on what traffic days this is modeled for. For example, will it still work during holiday peaks?
- Concern for the permanence of the improvements and need to state what these improvements won't fix and be upfront about this
- Chief of Staff (COS) raised concern for the vacant building on the east side to the north of the corridor – mentioned that traffic and access to driveway will limit uses here
- COS commented that improvements should focus on improvements to quality of Life
- Question on potential to have funding for parking lot connections through the state

## Technical Advisory Committee Comments

Thursday, October 26, 2018 at 2:30 PM

Old Town Hall Conference Room – 611 Old Post Road

Attendees:

| Name            | Organization                                                   |
|-----------------|----------------------------------------------------------------|
| Bill Hurley     | Engineering Manager, Fairfield                                 |
| Doug Holcomb    | CEO, Greater Bridgeport Transit (GBT)                          |
| George Obeng    | GIS Technician, MetroCOG                                       |
| Jim Wendt       | Assistant Planning Director, Fairfield                         |
| Mark Barnhart   | Director, Fairfield Office of Community & Economic Development |
| Matt Fulda      | Acting Director, MetroCOG                                      |
| Meghan Sloan    | Planning Director, MetroCOG                                    |
| Rob Kalamaras   | Fairfield Police                                               |
| Urb Leimkuhler  | Fairfield Senior Advocates & Human Services Committee          |
| Mark Cocoran    | Fairfield TPZ Committee                                        |
| Laura O'Brien   | Fairfield Bike / Ped                                           |
| Parker Sorenson | FHI                                                            |
| Craig Yannes    | Tighe & Bond                                                   |
| Mike Morehouse  | FHI                                                            |

- Doug Holcomb of GBT noted his support of the roundabout with a bus pull-out. The project team noted that the roundabout design is intended to be such that a bus does not have to use the truck apron. Doug Holcomb noted that this would lead to improved reliability and shorter turnaround time, while allowing GBT busses to wait for the return trip while not on a residential road
- Bill Hurley mentioned that crosswalks at Samp Mortar are in the process of being completed by the town.
- Doug Holcomb questioned the timeline of implementing the proposed concept. The estimated planning budget is \$23M, meaning that it would need to be scheduled in the TIP and funded.



Likely several years out. Doug replied that he is looking to put some bus shelters on the turnpike in the meantime.

- A Committee member raised concern for roundabout operation at Tunxis Hill and the Black Rock Turnpike. The member questioned access from the Black Rock Turnpike northbound entry. The member had concern for delay at this approach
- Committee members raised general concern for the short-term proposal and the thought that speed would not be adequately reduced between Stillson Road and Fairfield Woods Road. Several members noted that they would like to see the roundabout at Old Navy to be a second priority after a roundabout at Tunxis Hill.
- Several committee members expressed disapproval in the lack of pedestrian enhancements at Black Rock and Stillson Road intersection. Mike responded that this can be addressed with showing enhanced crossings and other minor modifications.

Route 58 Corridor Study  
Town of Fairfield  
Final Draft Report Review – CTDOT

FHI Team responses in yellow

1. Throughout the report Appendix A through D are referred to, but were not provided. If this was meant to refer to the Appendix in the Black Rock Turnpike Corridor Study Final Report Memo, the corresponding Appendices do not match. Please provide the Appendix for review.
  - a. These are provided in a separate document
2. A review of the Synchro analyses revealed that several instances where lag left-turn phasing was proposed. The Department prefers lead left-turn phasing.
  - a. The lagging left was limited to the Brookside/Fairfield Woods Road intersection as it was in the existing condition due to the proximity of the two closely spaced intersections and the geometric concerns for SB lefts into Fairfield Woods. The lead/lag phasing can be considered during design phase.
3. Recommended Segment 1 (Figure 34): The southbound Route 58 approach at Tahmore Drive will experience nearly 1200 foot queues in the 2040 afternoon peak improved conditions. Is this acceptable to the Town?
  - a. The 2040 concept keeps current geometrics, however recommends signal coordination at Tahmore with the rest of the corridor and the increase in cycle length to 110 seconds versus the current 75 seconds. This change allows this intersection to give a higher split percentage compared to the 2040 background condition (proposed = 85% versus current = 73%). This means that the 2040 Concept performs better in the southbound direction than the 2040 background condition. For example, expected delay in SB direction under the proposed concept is 53s compared to the 2040 background of 73 seconds. Also, it is noted that the Synchro model has this southbound leg coded as a single-shared left/thru/right lane. This means that in the LOS calculation, a waiting left-turning vehicle would prevent thru traffic to pass. The current configuration with an 8' shoulder allows vehicles to pass these left-turning vehicles, meaning that actual conditions may operate better than suggested by the Synchro model. For example, the 2017 existing conditions results show a design queue of 769 feet in the southbound direction, however, discussions with the Town suggest that these queues are not realized indicating that by-passing traffic may reduce queueing otherwise expected in this area.



4. Recommended Segment 2 (Figure 35): The southbound Route 58 approach at Samp Mortar Drive will experience nearly 800 foot queues in the 2040 afternoon peak improved conditions. Is this acceptable to the Town?
  - a. We compared the 2040 background to the 2040 concept queues. The 2040 concept queues (before signal retiming) in the southbound direction are 742' versus 2040 background of 293'; however, by increasing the cycle length at this signal (from 75 seconds to 110 seconds), and increasing the cycle split given to the southbound movement (from 29% to 55%) we can substantially mitigate queueing. The Synchro model shows that while queues of ~30 vehicles may form, the longer green-time given to the southbound direction over baseline conditions means that vehicles should be able to clear the intersection. Additionally, the recommendation to coordinate the Tahmore signal improves operations at this signal as well. In summary, operations should be substantially improved by the retiming of the signal as described. However, it will be expected that queues will develop during the afternoon peak, yet these are expected to be serviced within one cycle. In general, the operations appear to be satisfactory given the safety benefits expected to be realized with the proposed alignment. Future design phase can override this concept if the Town and State are uncomfortable with the anticipated operations.
5. Recommended Segment 2-3 (Figure 35/36): Is a 300 foot southbound Route 58 left-turn lane at Brookside Lane necessary? Was consideration given to providing a northbound Route 58 left-turn lane where there are more driveways on the west side of Route 58? In addition, it appears that it was analyzed as two southbound through lanes not a through lane and an exclusive left-turn lane. Which is correct?
  - a. We will shorten the turn pocket length and provide painted median space – which can potentially be used as a TWLTL and allow for left-turners to the driveways on the “western” side of Route 58.
6. Recommended Segment 3-4 (Figure 36/37): There is approximately 300 feet of storage for two lanes on southbound Route 58 between the proposed roundabout and Stillson Road (Route 135), was this taken into consideration in the Synchro analyses? The queues (50<sup>th</sup>/95<sup>th</sup>) during the PM and Saturday peaks extend over 300 feet.
  - a. CAD shows storage about 500' and should be sufficient for queuing
7. Recommended Segment 5 (Figure 38): For the Route 58 northbound approach at Katona Drive, should two through lanes be maintained instead of a through lane and an exclusive left-turn lane? The report indicated that northbound queues extend beyond the available storage during the Saturday peak. If the proposed configuration is to be maintained, why is a southbound Route 58 phase fixed advance proposed instead of providing a southbound left-turn lane where the mountable island is proposed?

- a. Max fixed was an issue within the file that doesn't not impact the results of the analyses. For safety reasons, a single through lane is preferred. High speed traffic with frequent lane changing is an issue and this area experienced several severe crashes, with three fatalities and a number of bicycle and pedestrian crashes.
8. Recommended Segment 5 (Figure 38): The alignment of the Route 58 northbound approach at Burroughs Road may increase the likelihood of same direction sideswipes due to the approach narrowing after the stop bar (22 feet to 19 feet). In addition, the report indicated that Route 58 northbound queues will extend over 500 feet, will this affect the operation of the proposed roundabout. Consideration should be given to maintaining two northbound through lanes.
- a. We will fix the visual of the cat tracks. There is enough storage for the queues extending to the roundabout.

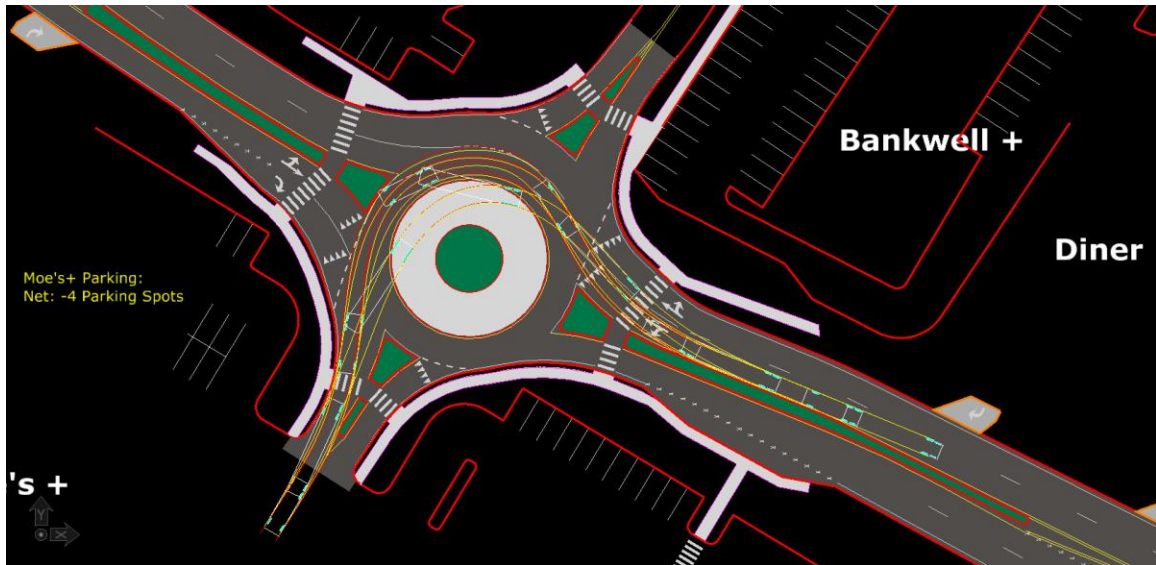
If the proposed configuration is to be maintained, was a Route 58 southbound left-turn lane at Burroughs Road considered instead of a mountable island?

- b. Left-turn lane not provided due to 1) right turn swept path of trucks from Burroughs to Black Rock North bound and 2) shift required by through traffic (from left lane to right – though mitigated by intersection geometry) causes concern with providing this space for left-turning vehicles.

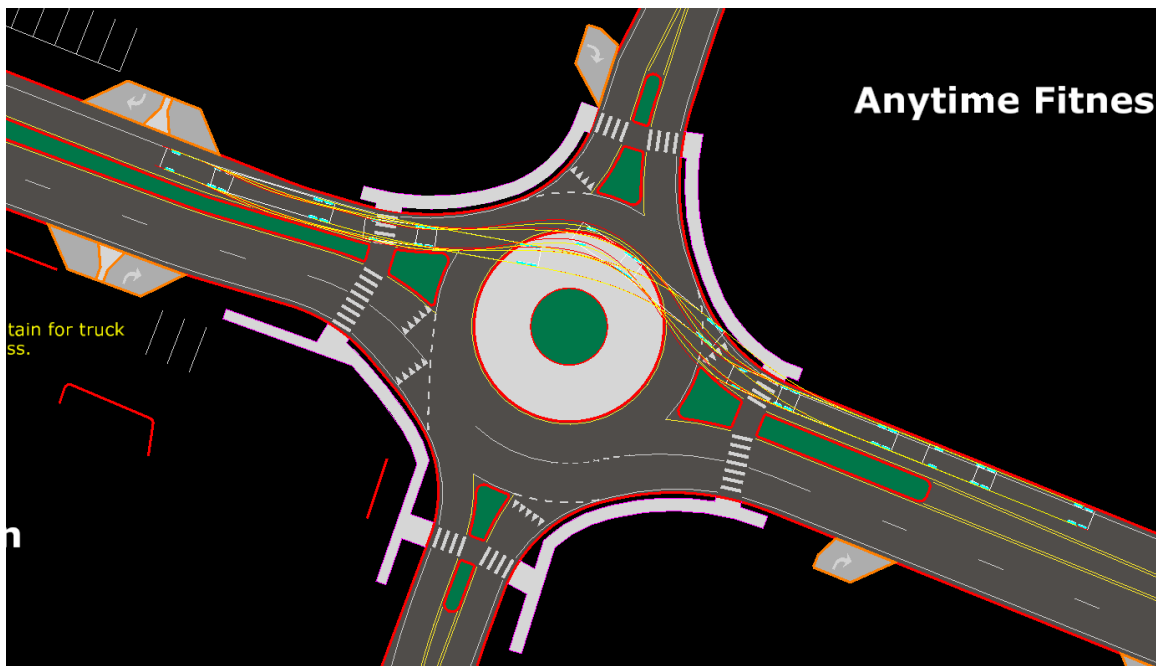
Will the business at 1817 Black Rock Turnpike be ok with the proposed mountable island restricting left-turns into their site from Route 58 northbound?

- c. We will emphasize that this median is not to be a raised due to this driveway as well as for accommodating truck right turns from Burroughs to BRT NB
9. Can the proper design vehicle navigate both proposed roundabouts?
- a. We tested the Tunxis roundabout and WB62 and 67's can make the turns. There may need to be some slight modifications and mountable islands, etc once the design is undertaken. For the Old Navy roundabout, the preliminary swept path for a left-turning WB 62 is shown below:

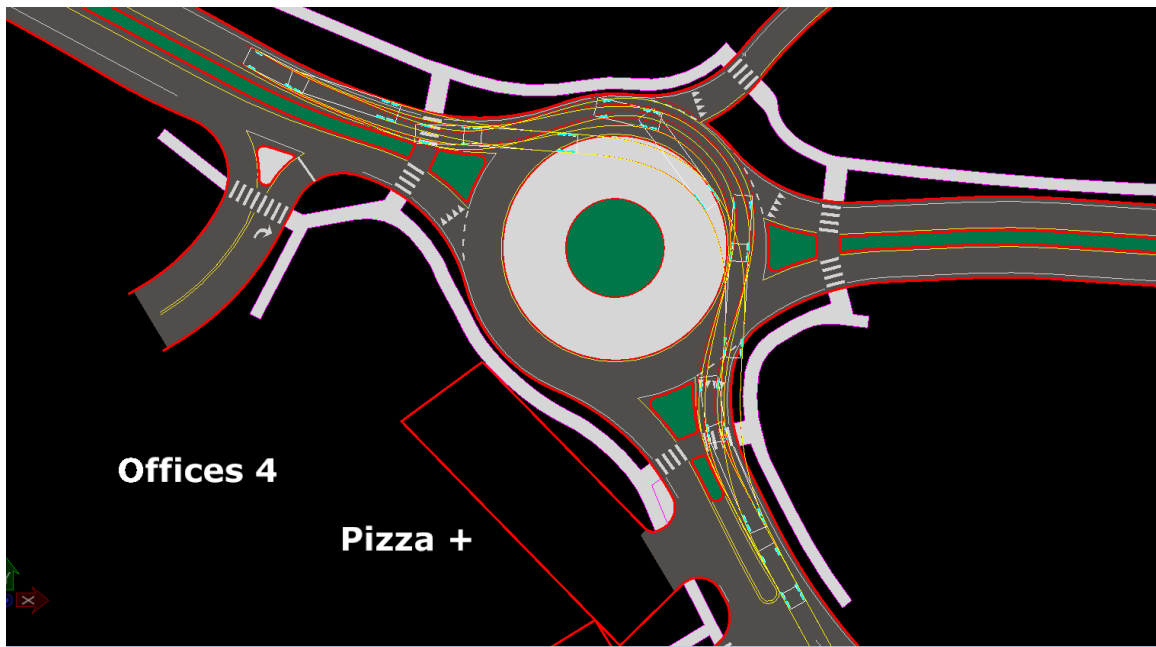




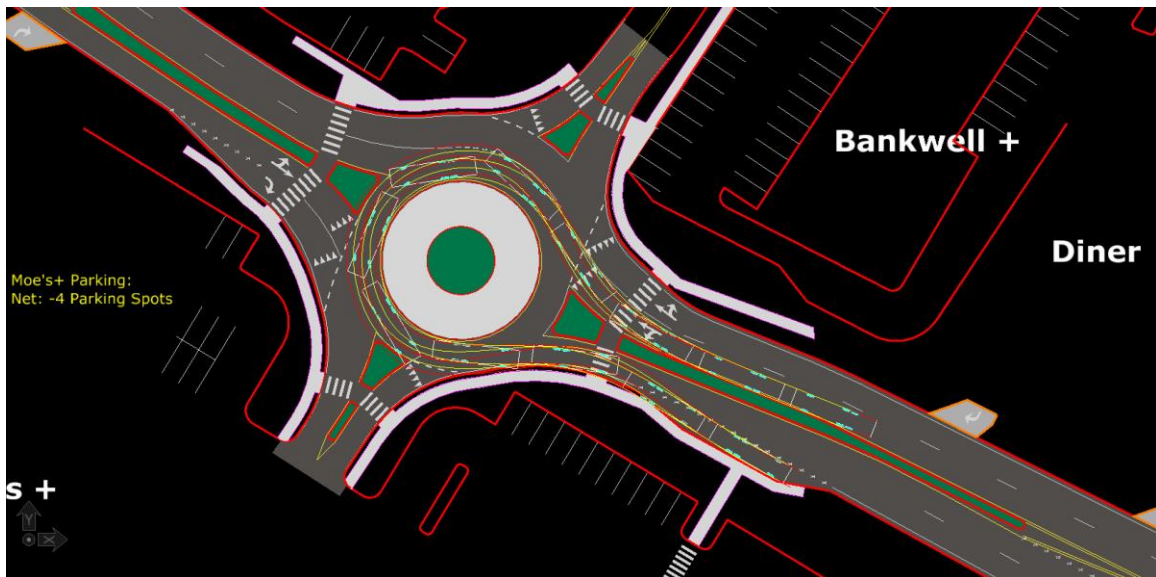
Swept path for through WB 62 for the originally proposed roundabout at Katona which had similar design. Design elements for buffer between sidewalk will likely need to be considered – but were successfully implemented in Glastonbury.



Left-turns for WB 62 at Tunxis Hill cut-off. This roundabout is larger (ISD = 130') which should be more than adequate for trucks.



Finally – the size of the Old Navy Roundabout should be designed to allow for GBT buses to U-turn without mounting the median. This roundabout should be adequately designed for this movement.



Materials design details are key. These roundabouts can be designed for trucks to be mount inside curb (e.g. Glastonbury Roundabout).

10. Near-term recommendations Segment 2 (Figure 41) only shows a single Route 58 southbound through lane approaching Samp Mortar Drive. Two lanes are existing today.

- a. This is correct. See answer to question 5. Town to decide on SB approach configuration during final design. Single lane was recommended for safety reasons.
11. Near-term recommendations Segment 3 (Figure 42): According to the MUTCD, a HAWK signal should be installed at least 100 feet from side streets and driveways that are controlled by STOP or YIELD signs. It appears that it is proposed directly adjacent to the Old Navy/Gap driveway which is stop controlled. Would RRFBs be a more appropriate treatment at this location for a short term solution? The cost of a HAWK signal is comparable to that of a traffic signal and may not be the most economical near-term solution.
  - a. HAWK signal within 100' from side-street guidelines could change in MUTCD, however a RRFB is also an option. Suggest revisiting this decision during final design.
12. Page 17 Figure 9: Locations of Crashes by Type and page 35 Figure 29: Locations for crash type are too small to interpret. Should be a whole page.
  - a. Ok, FHI to change.
13. The report and concept plans should clearly indicate where roadway widening is recommended.
  - a. With the exception of the Old Navy roundabout and the widening at Stillson, we've made every attempt to stay within curb to curb limits. There may be some sliver impacts in places, but the conceptual planning level of detail is not sufficient for precise determination of widening impacts. More extensive engineering and design phases will identify potential locations for widening.
14. Label each of the Figures 34 through 39 as Recommended Concept Plan. Label Figures 40 to 45 as Near Term Plan to distinguish between the two scenarios.
  - a. Ok, FHI to change.
15. Please note that all comments and markups on the Recommended Concept Plans (Figures 34 through 39) also apply to the plans in the Executive Summary (Figures ES-1 through ES-6).
  - a. Noted.



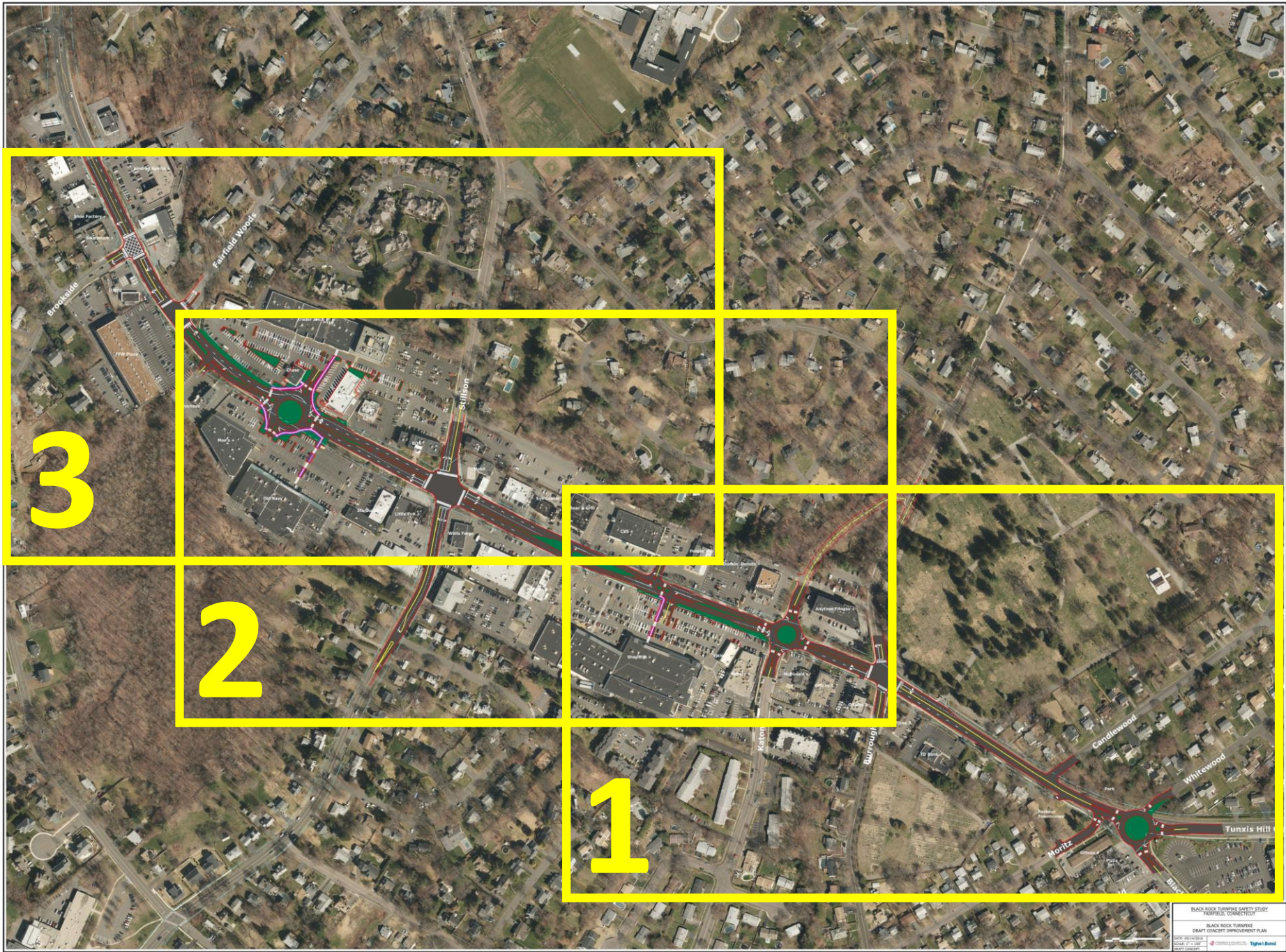
## BLACK ROCK TURNPIKE SAFETY STUDY

### APPENDIX B: PRELIMINARY CONCEPT PLAN

MAY 2019



# Section Key Map

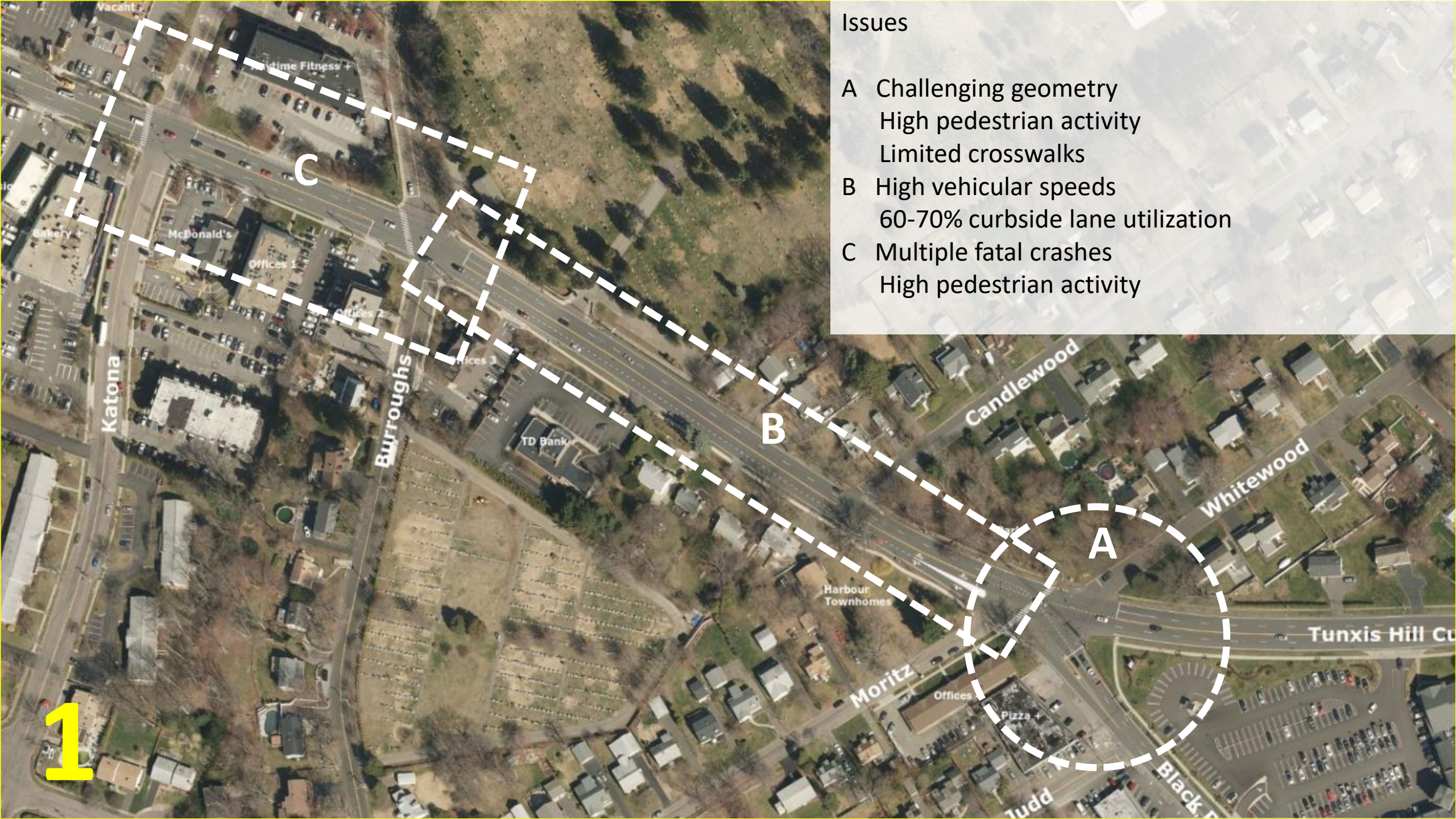




# Section 1







## Issues

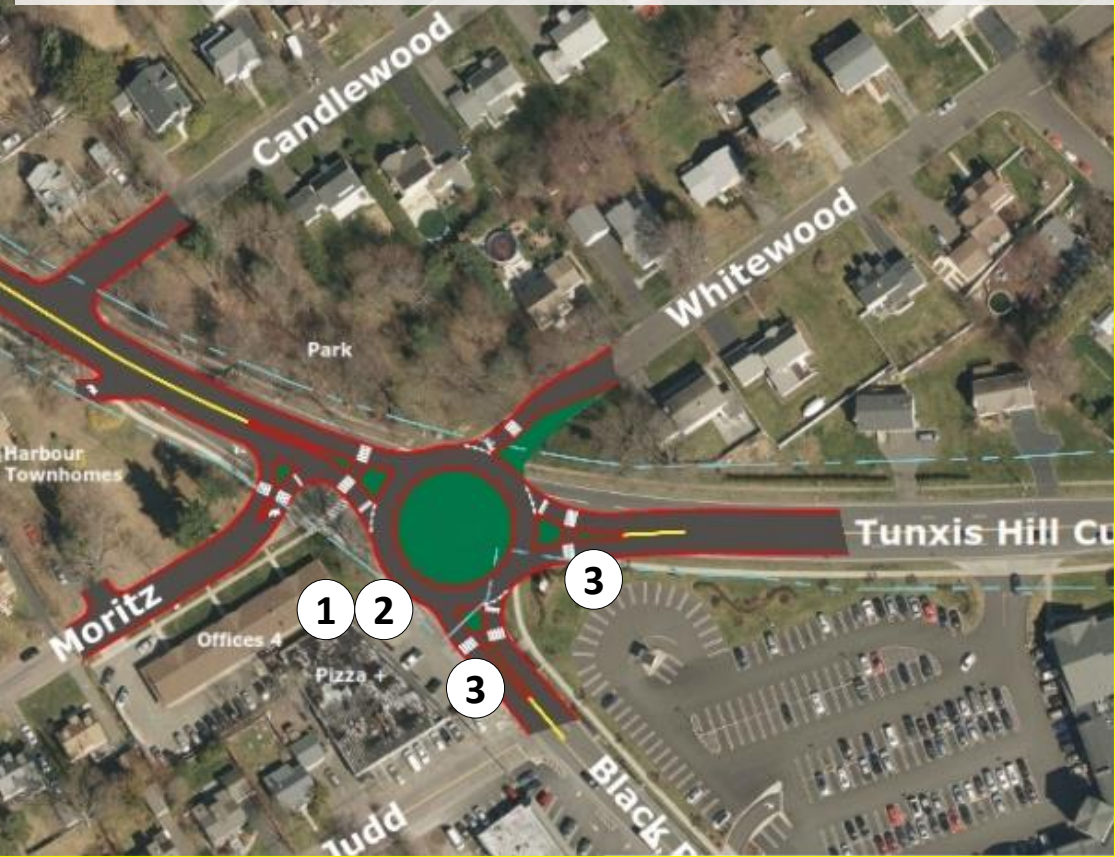
- A Challenging geometry  
High pedestrian activity  
Limited crosswalks
- B High vehicular speeds  
60-70% curbside lane utilization
- C Multiple fatal crashes  
High pedestrian activity





## Benefits of improvements

1. Roundabouts slow traffic and reduce travel lanes
2. Roundabouts reduce frequency and severity of crashes
3. Additional pedestrian crossings provided

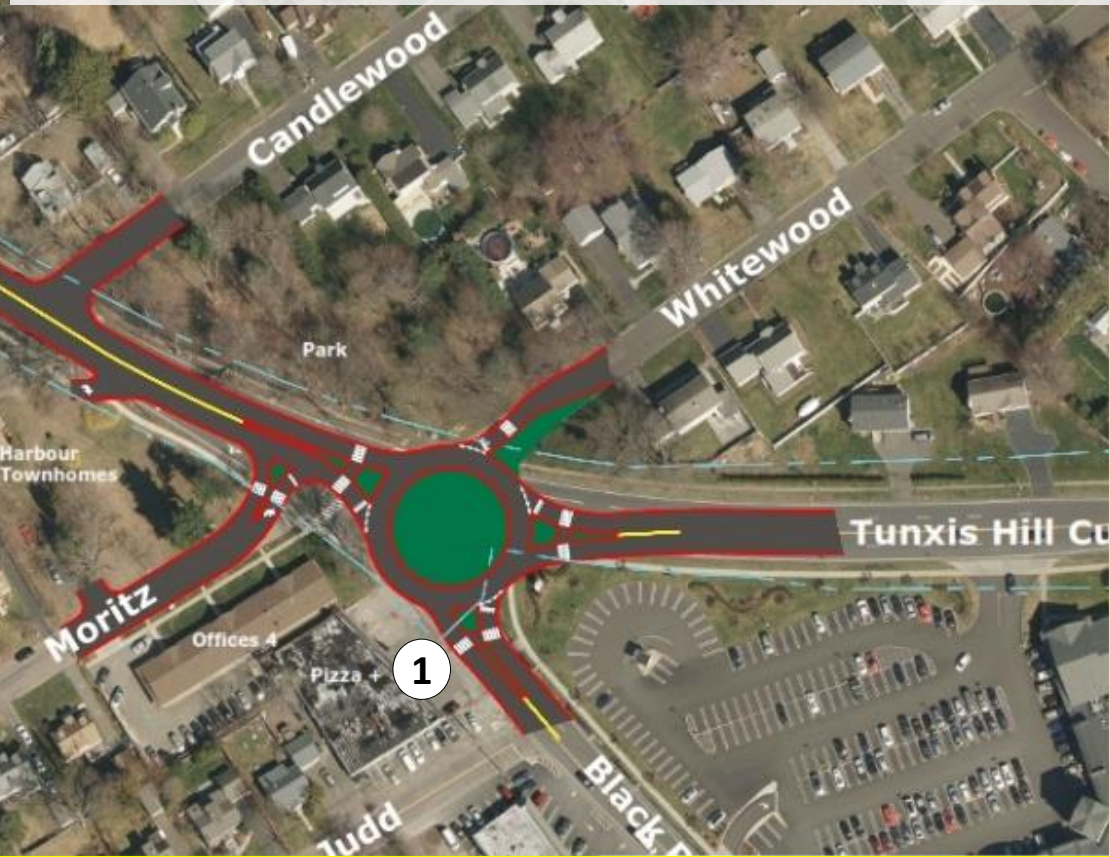






## Remaining issues

1. Roundabout requires shift to allow for parking circulation at plaza near Judd Street
2. Wetlands/watercourse behind Anytime Fitness + may preclude Katona Street connection
3. Strategies to mitigate spillover from southbound vehicles queued at Burroughs





# Section 2



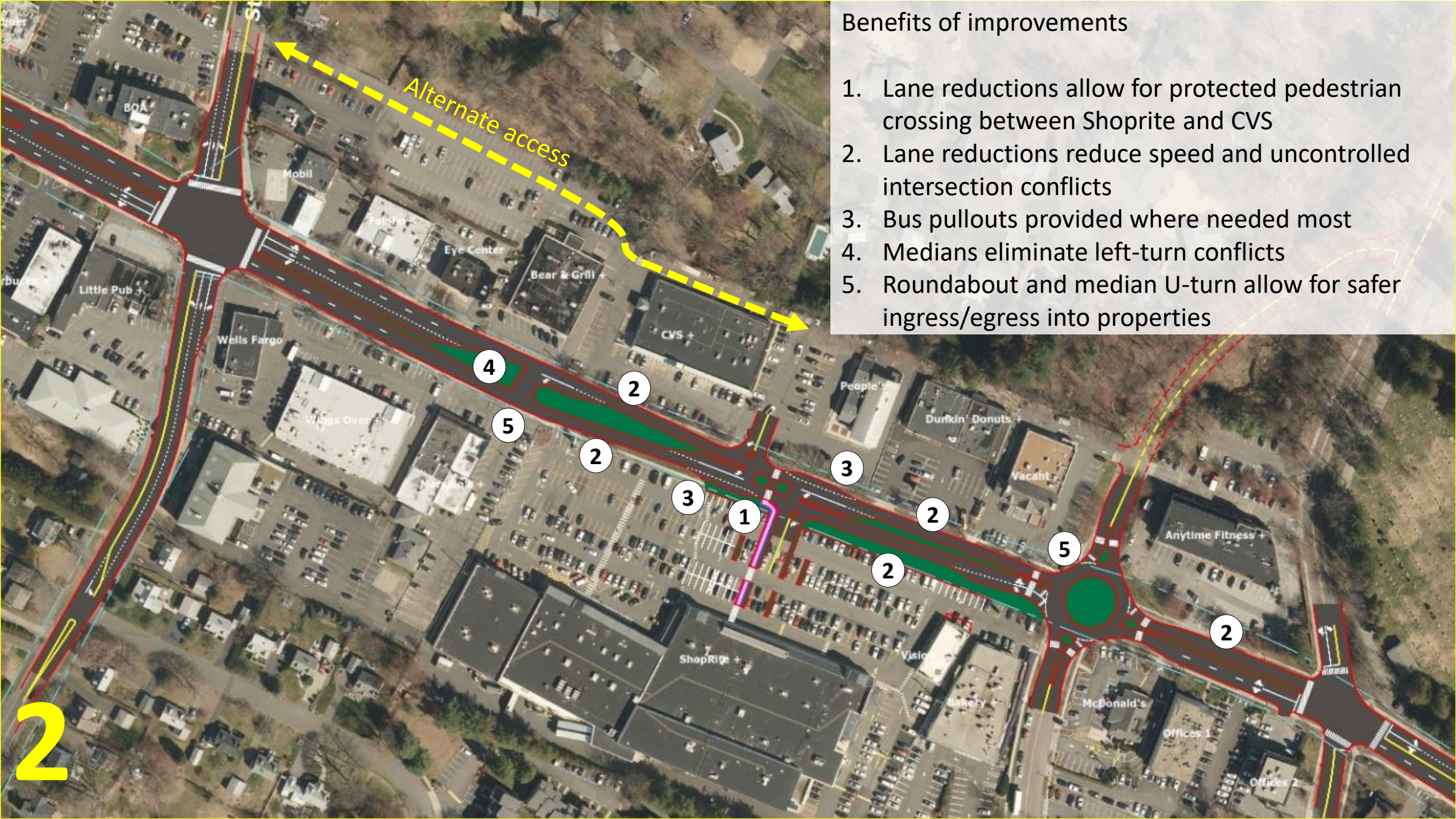




## Issues

- D Substandard sight lines  
High pedestrian activity  
Shoprite parking lot causes congestion
- E Numerous curb cuts/turn-related crashes
- F Highest crash location in corridor  
High pedestrian activity/Long crossing distance
- G Excessive vehicular queuing

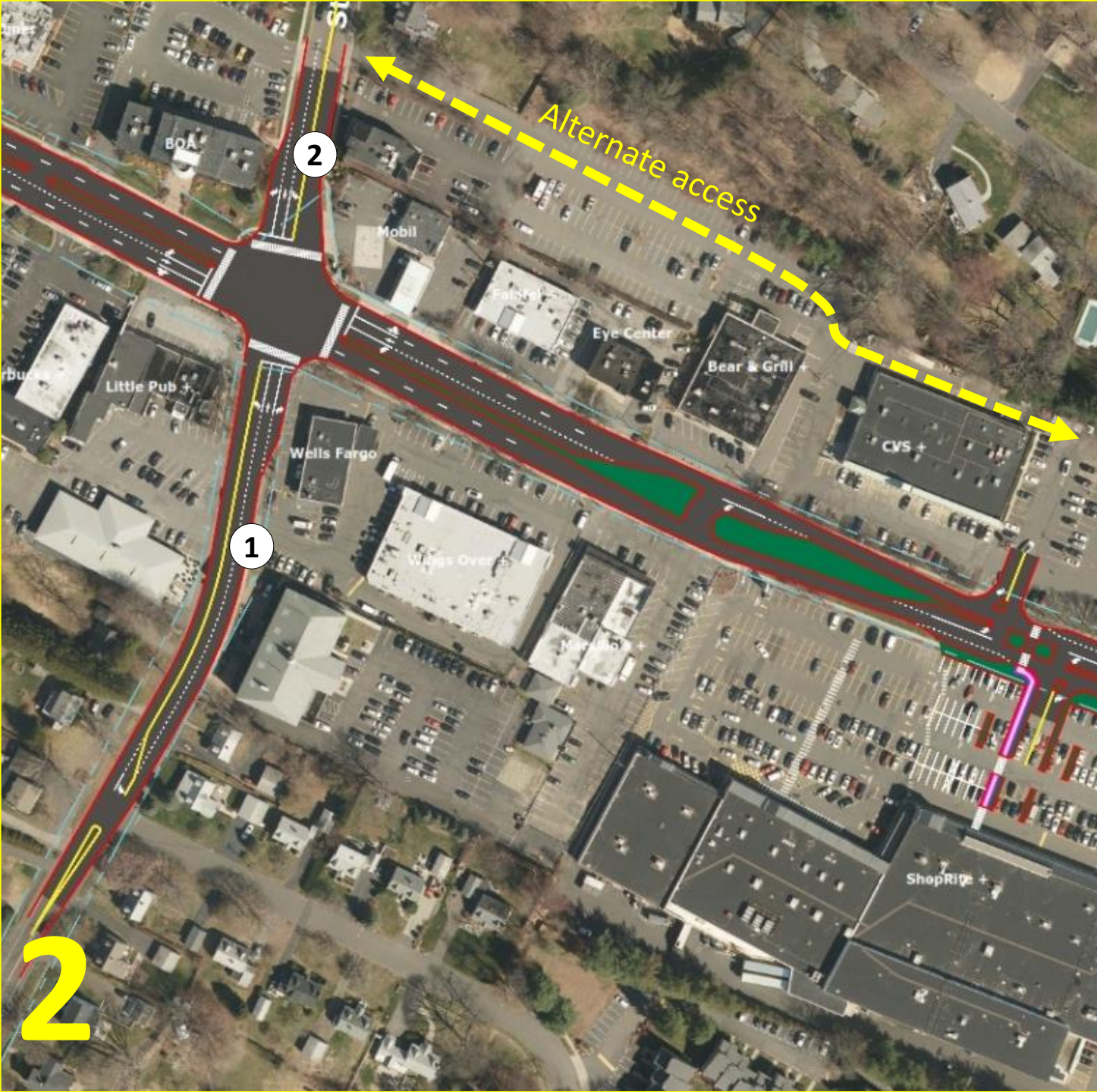




## Benefits of improvements

1. Lane reductions allow for protected pedestrian crossing between Shoprite and CVS
2. Lane reductions reduce speed and uncontrolled intersection conflicts
3. Bus pullouts provided where needed most
4. Medians eliminate left-turn conflicts
5. Roundabout and median U-turn allow for safer ingress/egress into properties

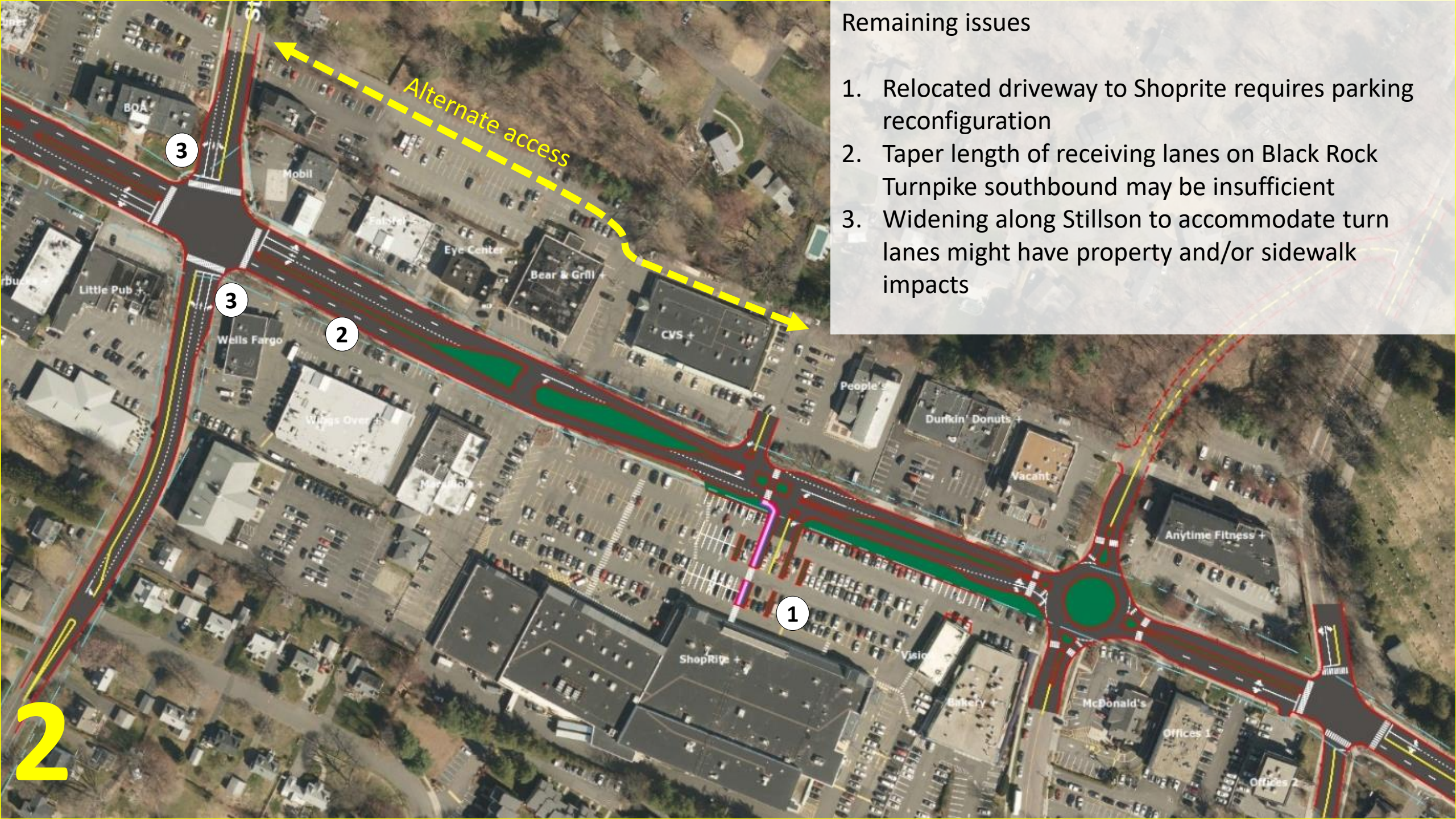




## Benefits of improvements continued

1. Right turn lane and extended left turn lane on Stillson EB approach reduces queuing
2. Right turn lane on Stillson WB approach reduces queuing





## Remaining issues

1. Relocated driveway to Shoprite requires parking reconfiguration
2. Taper length of receiving lanes on Black Rock Turnpike southbound may be insufficient
3. Widening along Stillson to accommodate turn lanes might have property and/or sidewalk impacts



# Section 3







## Issues

- H High NB speeds/Numerous curb cuts
- I Highest unsignalized crash location (left-turns)  
High pedestrian desire line  
No midblock crossing available
- J High SB speeds
- K Grade and sight line issues on Fairfield Woods  
High crash location
- L 70-80% curbside lane utilization





## Benefits of improvements

1. Roundabout slows traffic and reduces SB travel lanes/Reduces frequency and severity of crashes
2. Additional pedestrian crossings provided
3. Left turn lanes formalize existing turn movements
4. SB lane reduction lowers speed/normalizes flow
5. Medians control property ingress/egress
6. Bus pullout eliminates layover on FF Woods





## Remaining issues

1. Roundabout requires property impacts and net parking loss
2. Roundabout requires double lane NB
3. No lane reduction NB due to heavy traffic volume
4. Close spacing between Brookside and FF Woods
5. Relocation/consolidation of FFW Plaza and Duchess necessary for lane reduction and improved operations at FF Woods



## BLACK ROCK TURNPIKE SAFETY STUDY

# APPENDIX C: ACCESS MANAGEMENT RECOMMENDATIONS

MAY 2019

## Access Management

The high number of driveways along Black Rock Turnpike creates significant safety challenges because the road is designed to facilitate vehicular mobility over access. As identified in the existing conditions report, there are approximately 52 commercial curb cuts across the two-mile study corridor, with a particularly high number of driveways located between Stillson Road and Burroughs Road. This is of concern because additional curb cuts increase conflicts between higher speed through traffic and slower speed drivers turning in and out of parking lots.

In addition to the location of a high concentration of curb cuts between Stillson Road and Burroughs Road, people expressed concern over the Old Navy plaza and Trader Joe's driveways between Fairfield Woods Road and Stillson Road. Crash data at this location indicated that this area experiences the greatest number of driveway-related crashes in the corridor.

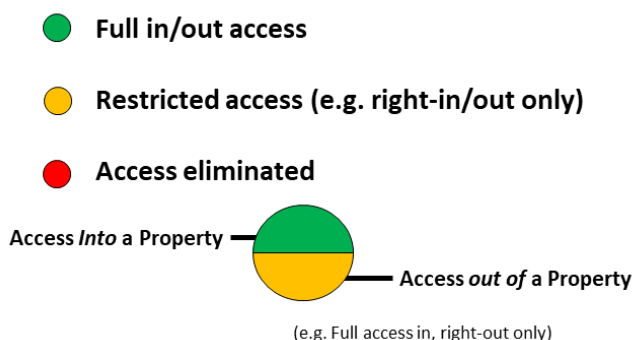
During the online public survey, many respondents stated that the high number of driveways contributed to a stressful driving environment as turning traffic causes some drivers to abruptly change lanes. Public comments expressed a desire for the project to consider cross property connections wherever feasible.

Access Management is the proactive management of property access points to promote safer and more efficient traffic operations. The approach of this project with regards to access management was to:

1. Establish opportunities for cross-property connections wherever possible,
2. Eliminate redundant access points on single parcels whenever feasible,
3. Restrict access of driveways to right-in or right-out to minimize risky left-turning movements.

The following sections detail the access management recommendations for the corridor. As Black Rock Turnpike continues to be developed over time, this plan can serve as a guide for the Town of Fairfield to use when dealing with property owners and the CT Department of Transportation. While making access modifications can be challenging and take many years, it is one of the more cost effective and beneficial solutions to addressing safety and congestion in the corridor. The following legend may be referred to for subsequent figures.

### Legend

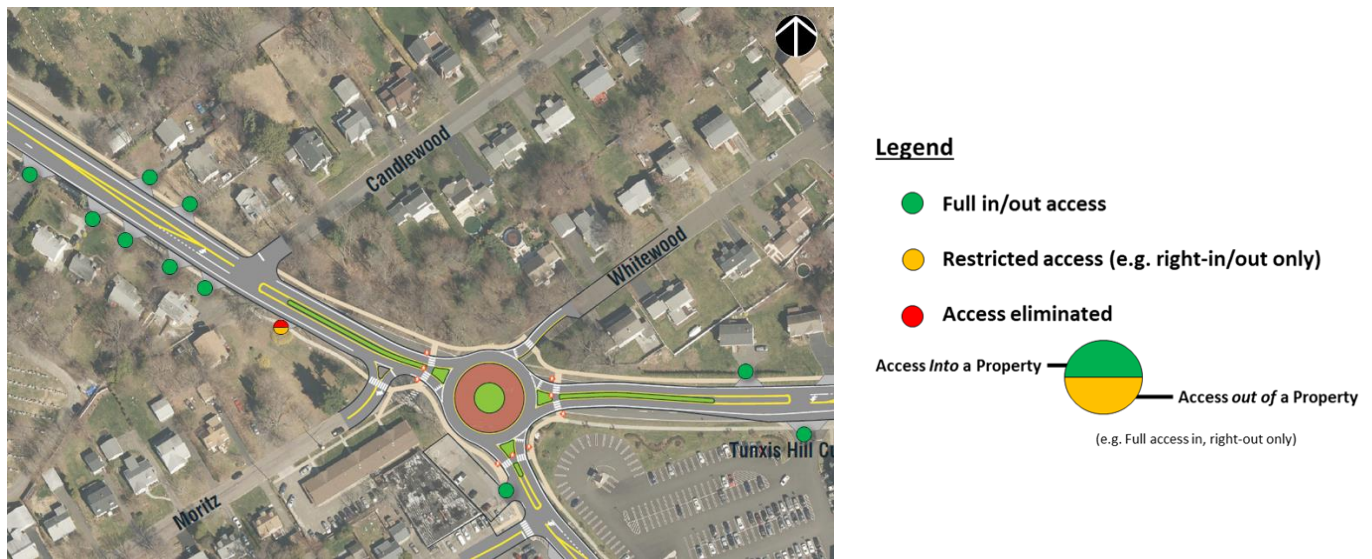


**Figure 29: Access management legend**



### *Tunxis Hill Cutoff to Burroughs Road*

In this segment, access is controlled by the proposed roundabout at Black Rock Turnpike and Tunxis Hill Cutoff. The proposed roundabout allows for the modification of Moritz Place to be right-in/right-out only and allows for the modification of Whitewood Drive to be one-way only towards Black Rock Turnpike. These modifications simplify operations at this existing 5-leg signalized intersection. Additionally, dedicated turn pockets are provided for southbound traffic to turn left onto Candlewood Road, for northbound traffic to turn left onto Judd Street and for northbound traffic to turn left into the Tunxis Hill Shopping Center. Minor driveway modifications are proposed for 1557 Black Rock Turnpike with the reduction of the driveway width to allow for appropriate space for the roundabout to be installed and enhance the pedestrian environment through this area.



**Figure 30: Access management recommendations between Tunxis Hill Cutoff and Burroughs Road**

### *Burroughs Road to Turnpike Shopping Center (ShopRite)*

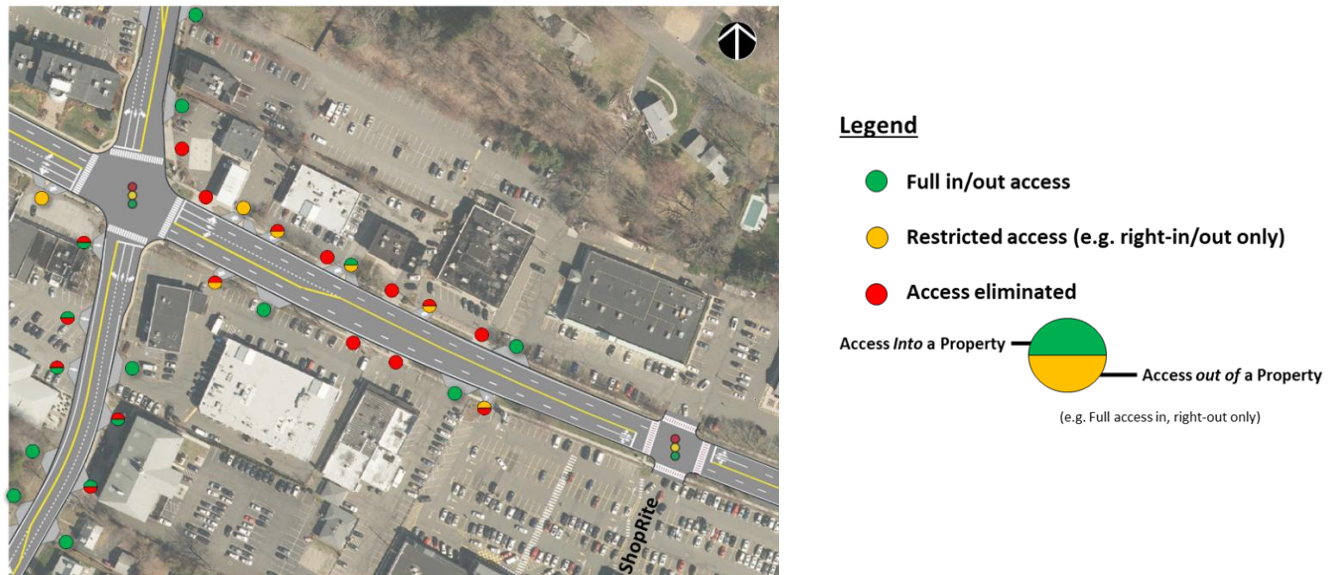
This segment of the corridor is proposed to look very similar to existing conditions, except for the removal of a driveway at 1838 Black Rock Turnpike and the modification of the southern driveway at the Turnpike Shopping Center to be right-in/out only (vs. the current full-access in/right-out only). Access to 1838 Black Rock Turnpike will be maintained from two access points on Burroughs Road and Katona Drive Extension, while left-turn in access to the Turnpike Shopping Center will be directed to the traffic signal just to the north. The southern driveway to the Turnpike Shopping Center is proposed to be reconstructed in such a way to still allow for delivery trucks to make the left-turn here as this entrance is critical for deliveries for tenants in this plaza.



**Figure 31: Access management recommendations between Burroughs Road and Turnpike Shopping Center**

#### *Turnpike Shopping Center to Stillson Road*

This segment was identified an area of concern with regards to the number of driveway curb-cuts and its vicinity to the congested Stillson Road intersection. Significant access management is recommended to improve traffic safety and generally enhance the operations of the corridor. Key to this plan is the utilization of a back-parking lot (located on the same parcel as 2000 Black Rock Turnpike [Bear & Grill]) to enhance cross property connections and allow for left-turning motorists to utilize the signal at Stillson Road for easier access to Black Rock Turnpike southbound. The proposed concept would eliminate seven driveways in the area while implementing access restrictions on an additional four driveways. These access management recommendations could substantially improve safety and congestion in this area.



**Figure 32: Access management recommendations between Turnpike Shopping Center and Stillson Road**



### *Stillson Road to Black Rock Shopping Center (Old Navy)*

Very minor modifications are proposed to driveway access in this segment. Two driveways are proposed to be eliminated entirely, with the proposed roundabout providing access to these properties at Black Rock Shopping Center and Lake Hills Shopping Center. Elsewhere, minor access restrictions are proposed for several driveways to prohibit left-turning traffic wherever possible. In all cases where left-turning traffic is prohibited, vehicles can exit to the right and circle around the roundabout to complete their journey.



**Figure 33: Access management recommendations between Stillson Road and Black Rock Shopping Center (Old Navy)**

### *Black Rock Shopping Center (Old Navy) to Brookside Drive*

For the last segment, driveway access proposed between the proposed roundabout at the Black Rock Shopping Center and Brookside Drive is limited. A total of three driveways are proposed to be eliminated – two of which at the Lake Hills Shopping Center with new access to the turnpike through the proposed roundabout. The final driveway proposed to be removed is the northern driveway to 2405 Black Rock Turnpike, Conway's Auto Repair, due to its proximity to the adjacent signalized intersection. This property, however, is proposed to maintain full access through its driveway on Brookside Drive and Black Rock Turnpike. In addition, the southern driveway to 2315 Black Rock Turnpike (Duchess Restaurant) is proposed to be modified to restricted access in the outbound direction only. Motorists who intend to turn left to proceed on the Black Rock Turnpike north will be able to make this turn via a U-turn in the proposed roundabout at the Black Rock Shopping Center



**Figure 34: Access management recommendations between Black Rock Shopping Center (Old Navy) and Brookside Drive**



## BLACK ROCK TURNPIKE SAFETY STUDY

### APPENDIX D: TRAFFIC ANALYSIS

MAY 2019

## Black Rock Turnpike Corridor Study Final Report Memo

**TO:** Michael Morehouse, P.E. & Parker Sorenson  
**FROM:** Thomas J. Wamser & Craig D. Yannes, P.E., PTOE  
**DATE:** January 9, 2019

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The following memorandum summarizes the future and improved conditions assessment that was performed for the Black Rock Turnpike (BRT) Corridor Study (the Study). The first two sections detail the traffic analyses undertaken to review the future traffic conditions of the corridor without any improvements to determine the impact of regional traffic growth followed by a section reviewing the results for the improvement Concepts A and B that have been developed by the study team. The final section provides guidance on Design, Permitting, Construction, and Cost considerations to implement the potential improvements.

### Future Conditions Traffic Assessment

The assessment of future conditions conducts an analysis of the Black Rock Turnpike study area under existing geometric and operational conditions utilizing 2040 Background traffic volumes. This process identifies deterioration of operational efficiency from existing conditions due to regional traffic growth and helps identify areas of concern where no improvements are made to the transportation system.

The future conditions analysis includes traffic projections based on the methodology described in the following section to expand the 2017 Existing traffic volumes to the 2040 Background traffic volumes. The Black Rock Turnpike study area intersections were analyzed under two scenarios: a Background and a Background-Optimized condition. The 2040 Background analysis utilizes existing geometry and existing traffic signal settings to facilitate a direct comparison between existing and future conditions. The 2040 Background-Optimized analysis utilizes existing geometry, but modifies intersection signal timings and settings to provide the most efficient operations for future conditions. This optimization analysis determines if future operational needs can be mitigated through low-cost adjustments to signal operations or if additional physical improvement are needed to provide measurable capacity improvements. Although these Background analyses provide a basis for generating roadway improvements to accommodate anticipated traffic growth for the corridor, they do not factor in safety related issues which was a primary factor in developing corridor improvements.

### Background Traffic Forecasts

As detailed in Section 4 of the Existing and Future Conditions Technical Memorandum, traffic volume and retail market trends suggest that traffic growth along the Black Rock Corridor will remain generally flat over the 20 year study horizon. However, the Town of Fairfield anticipates some additional housing development near the study corridor and recommended that some limited traffic growth be included in the future forecast to ensure conservative estimates for future traffic volumes. As a result, the study team applied a modest growth rate of 0.25% per year from 2017 to 2040. This growth rate was submitted and approved by CTDOT in January 2018. The 2017 Existing Condition Traffic Volumes and the projected 2040 Background Condition traffic volumes are presented in Figures 1 through 4 and Figures 5 through 8, respectively.



## **Background Traffic Operations**

Utilizing the existing geometry and traffic signal settings established under the 2017 Existing Traffic analyses, traffic operations for the 2040 Background Traffic Volumes were evaluated for the study area intersections using Trafficware's *Synchro plus SimTraffic 10 – Traffic Signal Coordination Software*, based on the *Highway Capacity Manual (HCM) 6<sup>th</sup> Edition* methodology.

Figures 9 and 10 and Tables 1 and 2 summarize the 2017 Existing Conditions results for reference purposes, while Figure 11 and 12 and Tables 3 and 4 present the 2040 Background Condition results. Figures 9 through 12 present a geographical representation of the overall signalized intersection LOS and unsignalized approach LOS results on a study area map with the LOS color coded by letter. Within Tables 1 and 3, intersections, approaches, and/or movements with significant delays (LOS E) and failing operations (LOS F) have been highlighted in yellow and red, respectively. Within Tables 2 and 4, intersection approach and/or movement average (50<sup>th</sup> percentile) and/or design queues (95<sup>th</sup> percentile) are highlighted in red when they exceed the available storage length. Overall traffic operations summary tables allowing comparisons for each peak hour across scenarios are included in Appendix A, while capacity analysis worksheets for the Existing and Background traffic analyses are included in Appendix B.

The background traffic growth slightly exacerbates existing capacity issues detailed in the Existing Conditions Technical Memo. Comparing the existing conditions to the background conditions, the following overall LOS deterioration was identified from the analyses during the specified peak hours:

- Black Rock Turnpike at Tahmore Drive: Decreased from C to D in the afternoon
- Black Rock Turnpike at Stillson Road: Decreased from D to E in the afternoon
- Black Rock Turnpike at Fairfield Woods Road: Decreased from A to B on Saturday
- Black Rock Turnpike at Turnpike Shopping Center: Decreased from B to C on Saturday
- Tunxis Hill Cutoff at Tunxis Hill Road (unsignalized): EBL decreased from C to D on Saturday

Select intersection approaches experienced decreases in one category of LOS mainly focused at the intersections where the overall LOS experienced a decrease. These decreases are a result of the incremental increases in traffic volume, which cause incremental increases in delay and subsequent decreases in LOS where existing conditions were on the threshold of two LOS categories. As with the existing conditions, the most significant congestion is focused on the Black Rock Turnpike at Stillson Road (Route 135) intersection.

## **Background Optimized Traffic Operations**

The 2040 Background Traffic Volumes were also analyzed with an optimized traffic network where the lane geometry remained unchanged, but traffic signal timings were optimized and additional coordination was added along the corridors. The purpose of the 2040 Background-Optimized traffic analysis is to determine how the existing signalization along the corridor would process expected future traffic volumes without any significant physical improvements.

The optimization process included a review of the coordinated system on the corridor, the coordinated system cycle lengths, and signal phase timing splits to balance delays on the intersection approaches to increase the efficiency of traffic operations. It also included modifications to the closed loop signal timing offsets which impact the progression of vehicles through the corridor. The optimization method was similar to the process employed by CTDOT, whom monitors state-maintained closed loop systems and periodically modifies the signal timings based on current volumes, to maintain operational efficiency. The optimization of the traffic signal operation included the following:

- Expansion of the existing closed loop coordination system on Route 58 (Black Rock Turnpike) to include all intersections from Tahmore Drive to Tunxis Hill Cutoff except for the intersection with Stillson Road, which runs free from coordination similar to the existing conditions
- Optimization of the study area intersection splits within existing minimums
- Optimization of the network cycle length and offsets for the coordinated system

A summary of the expected traffic operations with the signal optimization is provided in Figures 13 and 14 and Tables 5 and 6. Figures 13 and 14 summarize the overall signalized intersection LOS and unsignalized intersection approach LOS on the study area map with the LOS color coded by letter. Within Table 5, intersections, approaches, and/or movements with significant delays (LOS E) and failing operations (LOS F) have been highlighted yellow and red, respectively. Within Table 6, intersection approach and/or movement average (50<sup>th</sup> percentile) and/or design queues (95<sup>th</sup> percentile) are highlighted in red when they exceed the available storage length. Overall traffic operations summary tables allowing comparisons for each peak hour across the Existing, Background and Background-Optimized scenarios are included in Appendix A, while capacity analysis worksheets for the Background-Optimized traffic analyses are included in Appendix B.

The traffic signal optimization mitigates most of the delay caused by the additional background traffic growth. The following changes to LOS were identified from the analysis:

- Black Rock Turnpike at Tahmore Drive: Improved from D to C in the afternoon
- Black Rock Turnpike at Samp Mortar Drive: Improved from B to A midday
- Black Rock Turnpike at Fairfield Woods Road: Decreased from A to B midday
- Black Rock Turnpike at Turnpike Shopping Center: Improved from C to B on Saturday

The decrease in LOS at the intersection of Black Rock Turnpike at Fairfield Woods Road arose from a higher prioritization of other coordinated intersections in the optimization process in order to facilitate better operations along the corridor in its entirety. Significant overall intersection delays only persist at the intersection of Route 58 (Black Rock Turnpike) at Route 135 (Stillson Road) which operates at overall LOS E during the afternoon peak hour. However, there are individual movements at intersections along the corridor that operate at failing LOS E and F conditions and/or have queues extending beyond available storage. As a result, these Background Optimized analyses served as a basis for the creation of improvement Concepts A and B, which aim to improve traffic congestion, while also balancing traffic safety to accommodate all users of the corridor.



## **Improved Conditions Traffic Assessment**

This section details the study recommendations for transportation system improvements and enhancements. The recommendations address both existing safety issues and capacity issues resulting from the forecasted travel demand for 2040. Two concepts encompassing the entire corridor, Concept A and Concept B, were developed as alternatives for the improved roadway conditions. Concept A mostly addresses safety concerns with the corridor, but does provide additional capacity where possible. These safety-oriented improvements do result in decreased intersection operations at some locations. Concept B also mainly addresses safety issues, while taking a less aggressive approach than Concept A. As a result, Concept B typically provides better intersection traffic operations for vehicles.

### **Concept A Traffic Operations**

Concept A analyzes the 2040 Background Traffic Volumes on a revised traffic network that reflects the conceptual improvements to the study area intersections and roadways. It incorporates extensive physical changes to the corridor as well as changes to the traffic signal settings. From a traffic capacity standpoint, the major changes are as follows:

- Modification to the lane use on the main line, side street, and driveway approaches to provide a single Black Rock Turnpike through lane where possible to calm traffic flow and increase traffic safety
- Relocation of the signalized commercial driveway approach across from Fairfield Woods Road to be a two-way stop controlled intersection approximately 300 feet to the south of the Fairfield Woods Road intersection
- Construction of a modern roundabout at the Old Navy and Trader Joe's Plaza Driveways intersection
- Removal of the traffic signal at the Turnpike Shopping Center and Fairway Plaza Driveway intersection and restriction to right-out only egress while separating the two driveway intersections to allow the installation of a High Intensity Activated Crosswalk for pedestrian crossings between the plazas
- Construction of a modern roundabout at the Katona Drive intersection
- Restriction of northbound left turns from Black Rock Turnpike onto Burroughs Road
- Construction of a modern roundabout at the Tunxis Hill Cutoff Intersection and realignment of Moritz Place to be a two-way stop controlled intersecting Black Rock Turnpike north of the roundabout operation
- Modification of the existing closed loop coordination system on Route 58 (Black Rock Turnpike) to only include the intersections from Tahmore Drive to Fairfield Woods Road
- Optimization of the study area intersection splits within existing minimums
- Optimization of the intersection/network cycle lengths and associated offsets

Due to the scope of the changes detailed above, the 2040 Background Traffic volumes were adjusted with respect to revised traffic patterns expected with the intersection geometry, property access points, and turn restrictions changes along the corridor. These 2040 Concept A traffic volumes are presented in Figures 15 through 18.

A summary of the expected traffic operations under the Concept A conditions is provided in Figures 19 and 20 and Tables 7 and 8. Figures 19 and 20 summarize the overall signalized intersection LOS and unsignalized intersection approach LOS on the study area map with the LOS color coded by letter. Within Table 7, intersections, approaches, and/or movements with significant delays (LOS E) and failing operations (LOS F) have been highlighted yellow and red, respectively. Within Table 8, intersection approach and/or movement average (50<sup>th</sup> percentile) and/or design queues (95<sup>th</sup> percentile) are highlighted in red when they exceed the available storage length. Overall traffic operations summary tables allowing comparisons for each peak hour across the analysis scenarios are included in Appendix A, while capacity analysis worksheets for the Concept A traffic analyses are included in Appendix B.

The Concept A improvements address the corridor safety issues and some capacity issues where possible, but operational deficiencies remain at select intersections in lieu of safety benefits. The following operating conditions were identified from the analysis:

- Intersection overall LOS maintained at an acceptable LOS C or better with the exception of the Black Rock Turnpike at Route 135 (Stillson Road), which operates at overall LOS D in all peaks, and the Black Rock Turnpike at Katona Drive roundabout, which operates at overall LOS E, D, and F in the morning, afternoon, and Saturday midday peaks, respectively.
- Movements and approaches operate acceptably at LOS D or better, with the exception of the following movements, which operate at LOS E during the identified peak hour:
  - Samp Mortar Left Turns in the morning and midday
  - Brookside Drive Left Turns in the morning and afternoon
  - Fairfield Woods Road Right Turns in the morning, midday, and afternoon
  - Black Rock Turnpike at Stillson Road - Black Rock Turnpike Northbound and Southbound Left Turns in the afternoon and Saturday midday; Stillson Road Eastbound and Westbound Throughs in the afternoon

In these cases, the safety improvements and/or the optimization of the traffic signal timing for the project 2040 volumes reduce the operational efficiency for these select approaches in favor of the Black Rock Turnpike main line through movements.

- Design queues for the following select intersection movements extend beyond available storage due to the reduction of a through travel lane on Black Rock Turnpike:
  - Black Rock Turnpike at Fairfield Woods – Black Rock Turnpike Southbound Throughs in the afternoon
  - Black Rock Turnpike at Katona Drive Roundabout – Black Rock Turnpike Northbound Approach in the morning, afternoon, and Saturday midday



- In addition to the queues that extend beyond available storage, there are select movements that experience queues that are within available storage, but extend over approximately 500 feet due to the proposed improvements, including:
  - Black Rock Turnpike at Tahmore Drive – Black Rock Turnpike Southbound Approach in the morning, afternoon, and Saturday midday
  - Black Rock Turnpike at Samp Mortar Drive – Black Rock Turnpike Southbound Throughs in the afternoon and Saturday midday
  - Black Rock Turnpike at Burroughs Road – Black Rock Turnpike Northbound Throughs in the morning

### **Concept B Traffic Operations**

Concept B analyzes the 2040 Background Traffic Volumes on a revised traffic network that reflects the conceptual improvements to the study area intersections and roadways. It incorporates extensive physical changes to the corridor as well as changes to the traffic signal settings. From a traffic capacity standpoint, the major changes are as follows:

- Modification to the lane use on the main line, side street, and driveway approaches to provide a single Black Rock Turnpike through lane where possible to calm traffic flow and increase traffic safety
- Construction of a modern roundabout at the Old Navy and Trader Joe's Plaza Driveways
- Construction of a modern roundabout at the Tunxis Hill Cutoff Intersection and realignment of Moritz Place to be a two-way stop controlled intersection
- Provide separate closed loop coordination systems on Route 58 (Black Rock Turnpike) for the intersections from Tahmore Drive to Fairfield Woods Road and from the Turnpike Shopping Center and Fairway Plaza Driveways to Burroughs Road
- Optimization of the study area intersection splits within existing minimums
- Optimization of the intersection/network cycle lengths and associated offsets

Similar to Concept A, the scope of the changes detailed above result in expected revisions to the traffic patterns along the corridor. As such, the 2040 Background Traffic volumes were adjusted and the 2040 Concept B traffic volumes are presented in Figures 21 through 24.

A summary of the expected traffic operations under the Concept B conditions is provided in Figures 25 and 26 and Tables 9 and 10. Figures 25 and 26 summarize the overall signalized intersection LOS and unsignalized intersection approach LOS on the study area map with the LOS color coded by letter. Within Table 9, intersections, approaches, and/or movements with significant delays (LOS E) and failing operations (LOS F) have been highlighted yellow and red, respectively. Within Table 10, intersection approach and/or movement average (50<sup>th</sup> percentile) and/or design queues (95<sup>th</sup> percentile) are highlighted in red when they exceed the available storage length. Overall traffic operations summary tables allowing comparisons for each peak hour across scenarios are included in Appendix A, while capacity analysis worksheets for the Concept B traffic analyses are included in Appendix B.

Like Concept A, the Concept B improvements address the corridor safety issues, but make fewer vehicular traffic operational concessions. Improvements target capacity issues where possible, but operational deficiencies remain at select intersections in lieu of safety benefits. The following operating conditions were identified from the analysis:

- Intersection overall LOS maintained at an acceptable LOS C or better with the exception of the Black Rock Turnpike at Route 135 (Stillson Road), which operates at overall LOS D in the morning, afternoon and Saturday midday peaks.
- Movements and approaches operate acceptably at LOS D or better, with the exception of the following movements, which operate at LOS E during the identified peak hour:
  - Brookside Drive Left Turns in the afternoon
  - Fairfield Woods Road Through-Left Movements in the midday, afternoon, and Saturday midday and Fairfield Woods Road Right Turns in the afternoon and Saturday midday
  - Black Rock Turnpike at Stillson Road - Black Rock Turnpike Northbound and Southbound Left Turns in the afternoon and Saturday midday

Similar to Concept A, in these cases, the safety improvements and/or the optimization of the traffic signal timing for the project 2040 volumes reduce the operational efficiency for these select approaches in favor of the Black Rock Turnpike main line through movements.

- Design queues for the Black Rock Turnpike Northbound Through-Right Movements at Tahmore Drive extend beyond available storage due to the reduction of a through travel lane on Black Rock Turnpike.
- In addition to the queues that extend beyond available storage, there are select movements that experience queues that are within available storage, but extend over approximately 500 feet due to the proposed improvements, including:
  - Black Rock Turnpike at Tahmore Drive – Black Rock Turnpike Southbound Approach in the morning, afternoon, and Saturday midday
  - Black Rock Turnpike at Samp Mortar Drive – Black Rock Turnpike Southbound Throughs in the afternoon and Saturday midday
  - Black Rock Turnpike at Burroughs Road – Black Rock Turnpike Northbound Through-Left in the morning, afternoon, and Saturday midday



## **FIGURES**

**LEGEND**

VOLUMES: AM (PM)

-  TRAFFIC SIGNAL
-  STOP SIGN
-  ROUNDABOUT

SCALE: NTS

Black Rock Turnpike  
Traffic Study  
Fairfield,  
Connecticut

July 2017

**2017 EXISTING  
TRAFFIC VOLUMES  
WEEKDAY MORNING &  
AFTERNOON PEAK HOUR  
PART 1**

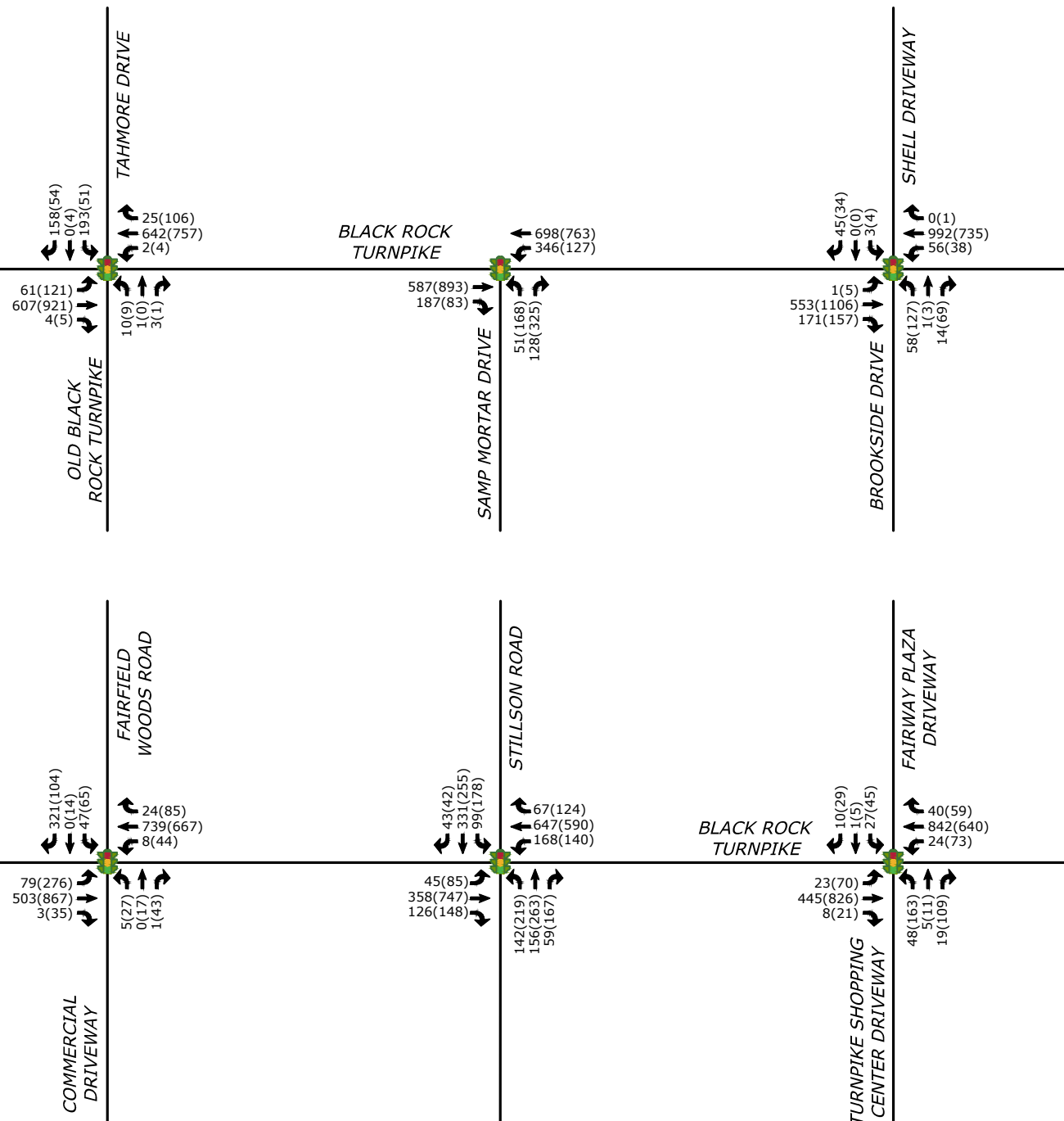
**FIGURE 1**



MATCH LINE - THIS SHEET

MATCH LINE - FIGURE 2

MATCH LINE - THIS SHEET





**LEGEND**

VOLUMES: AM (PM)

-  TRAFFIC SIGNAL
-  STOP SIGN
-  ROUNDABOUT

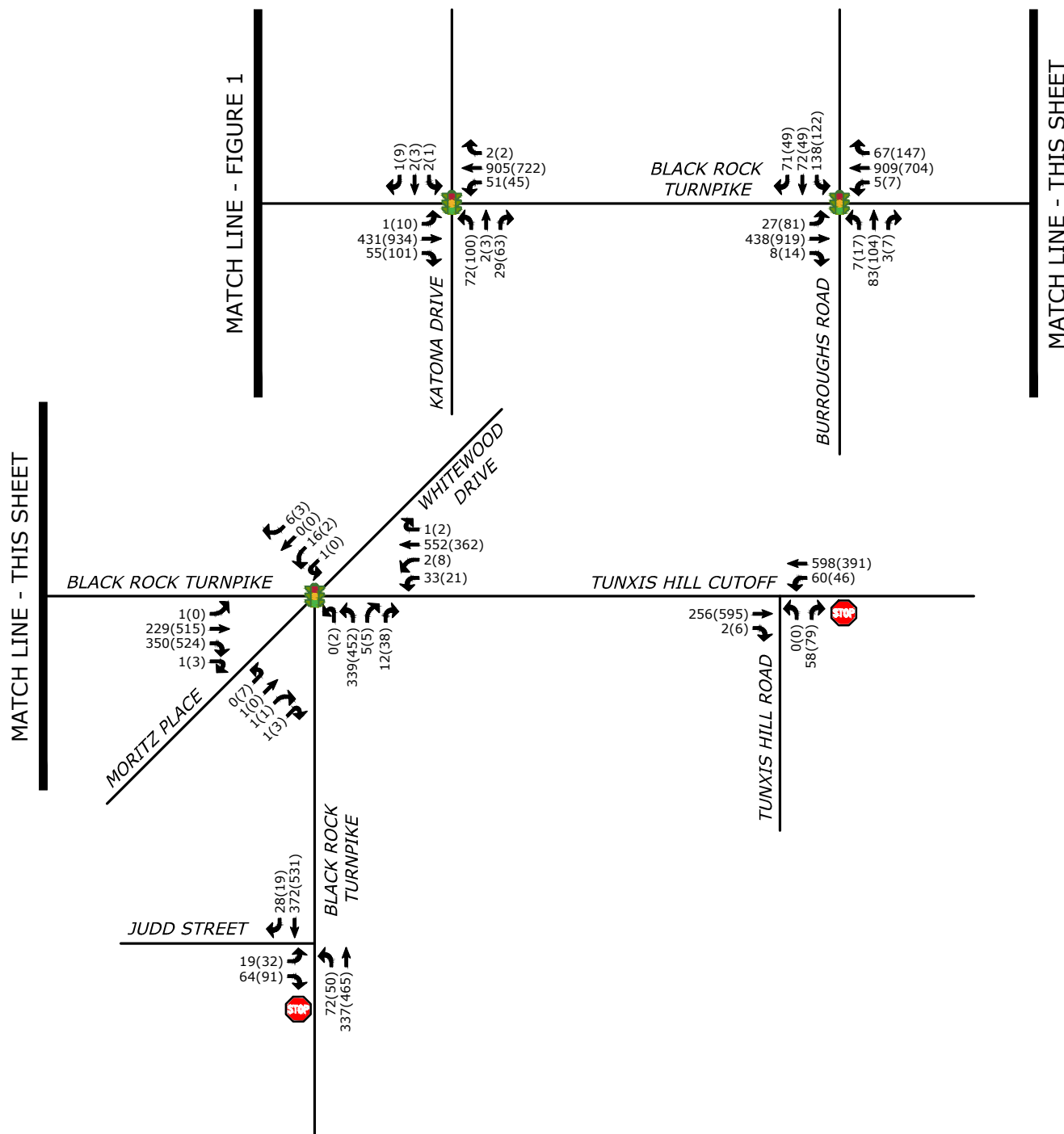
SCALE: NTS

Black Rock Turnpike  
Traffic Study  
Fairfield,  
Connecticut

July 2017

**2017 EXISTING  
TRAFFIC VOLUMES  
WEEKDAY MORNING &  
AFTERNOON PEAK HOUR  
PART 2**

**FIGURE 2**





**LEGEND**

VOLUMES: MID (SAT)

-  TRAFFIC SIGNAL
-  STOP SIGN
-  ROUNDABOUT

SCALE: NTS

Black Rock Turnpike  
Traffic Study  
Fairfield,  
Connecticut  
  
July 2017

**2017 EXISTING  
TRAFFIC VOLUMES  
WEEKDAY MIDDAY &  
SATURDAY PEAK HOUR  
PART 1**

**FIGURE 3**

MATCH LINE - THIS SHEET

MATCH LINE - THIS SHEET

MATCH LINE - FIGURE 4





**LEGEND**

VOLUMES: MID (SAT)

-  TRAFFIC SIGNAL
-  STOP SIGN
-  ROUNDABOUT

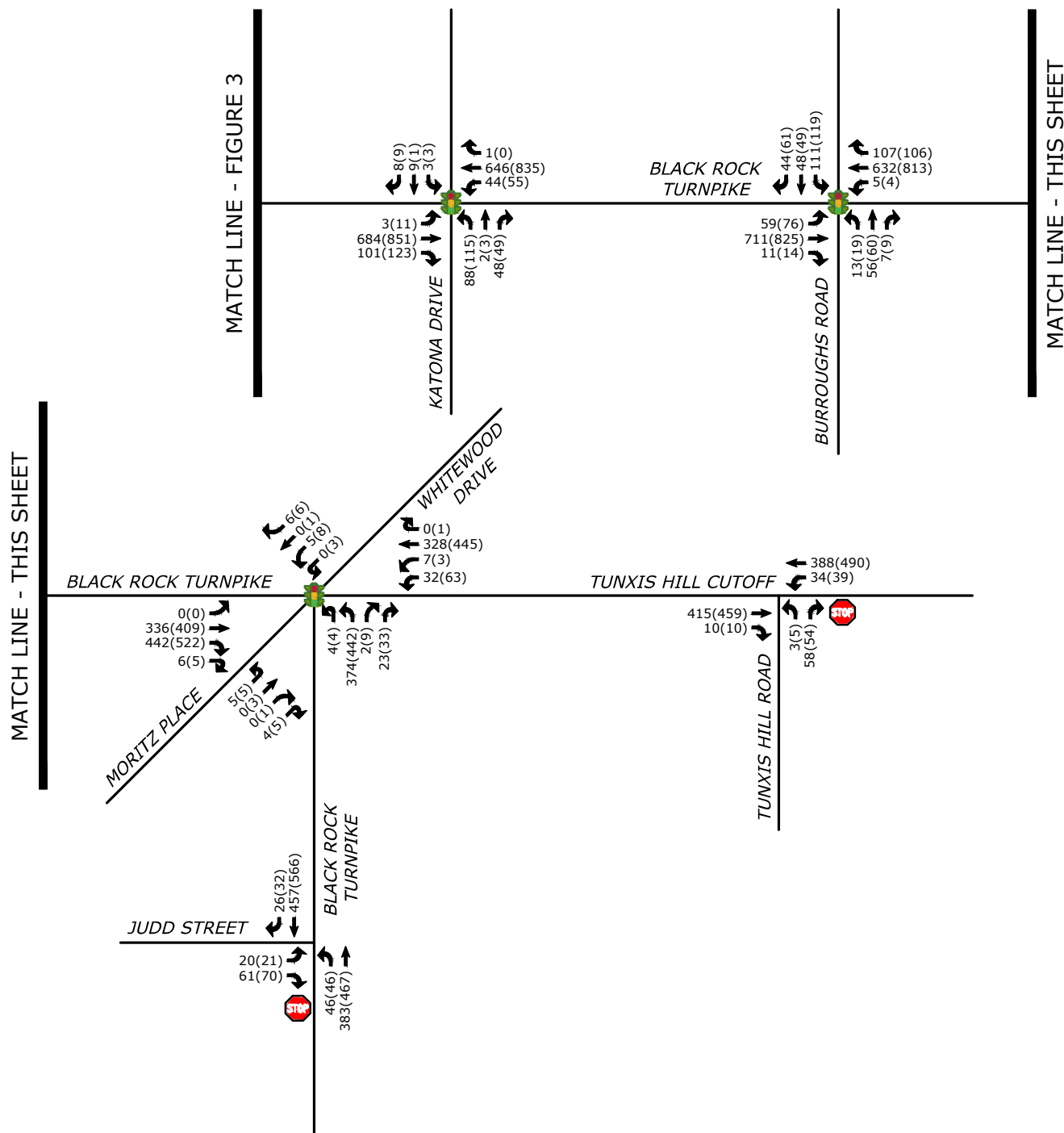
SCALE: NTS

Black Rock Turnpike  
Traffic Study  
Fairfield,  
Connecticut

July 2017

**2017 EXISTING  
TRAFFIC VOLUMES  
WEEKDAY MIDDAY &  
SATURDAY PEAK HOUR  
PART 2**

**FIGURE 4**



MATCH LINE - THIS SHEET

MATCH LINE - FIGURE 3

MATCH LINE - THIS SHEET

**LEGEND**

VOLUMES: AM (PM)

-  TRAFFIC SIGNAL
-  STOP SIGN
-  ROUNDABOUT

SCALE: NTS

Black Rock Turnpike  
Traffic Study  
Fairfield,  
Connecticut

July 2017

**2040 BACKGROUND  
TRAFFIC VOLUMES  
WEEKDAY MORNING &  
AFTERNOON PEAK HOUR  
PART 1**

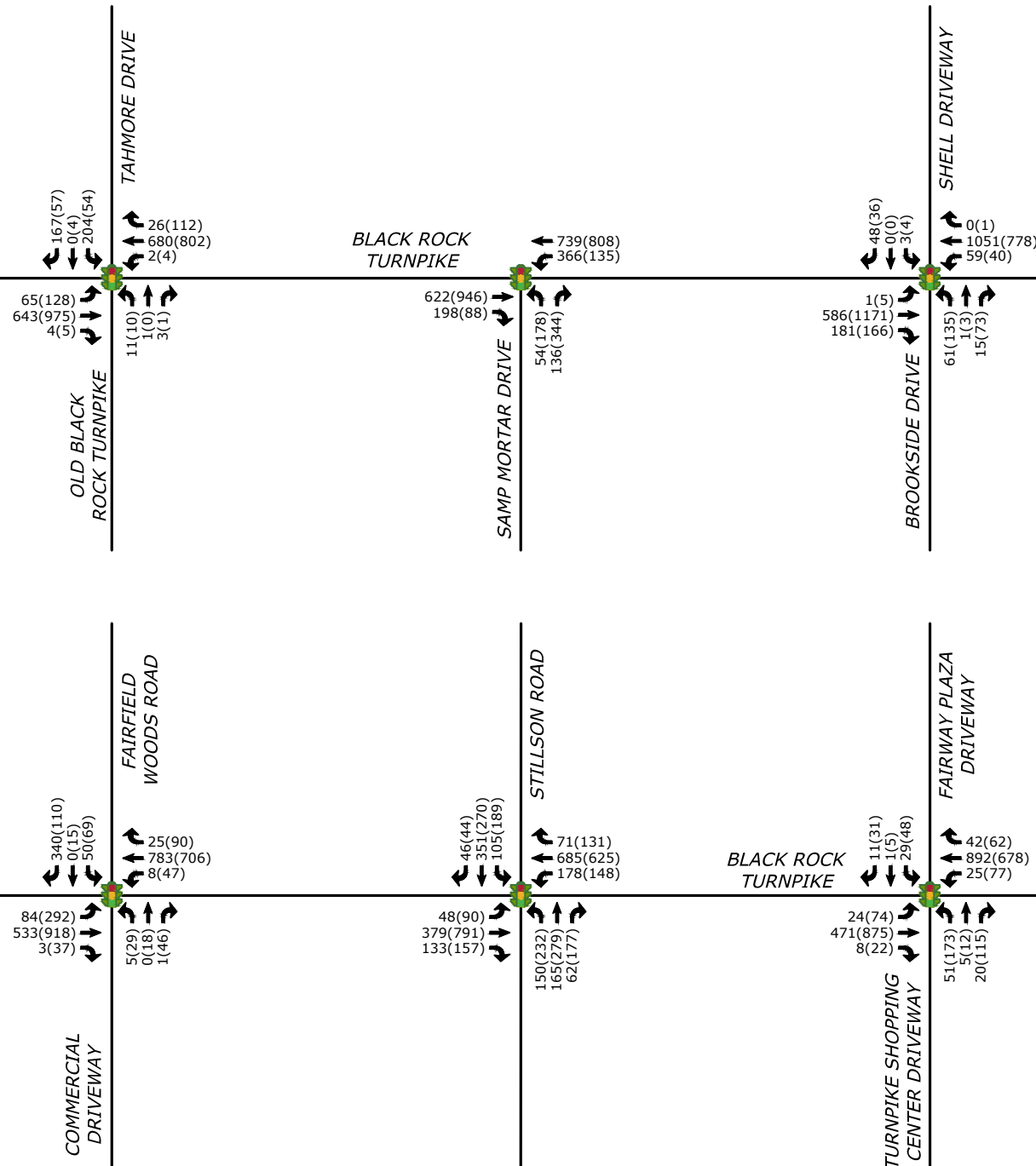
**FIGURE 5**



MATCH LINE - THIS SHEET

MATCH LINE - FIGURE 6

MATCH LINE - THIS SHEET





**LEGEND**

VOLUMES: AM (PM)

-  TRAFFIC SIGNAL
-  STOP SIGN
-  ROUNDABOUT

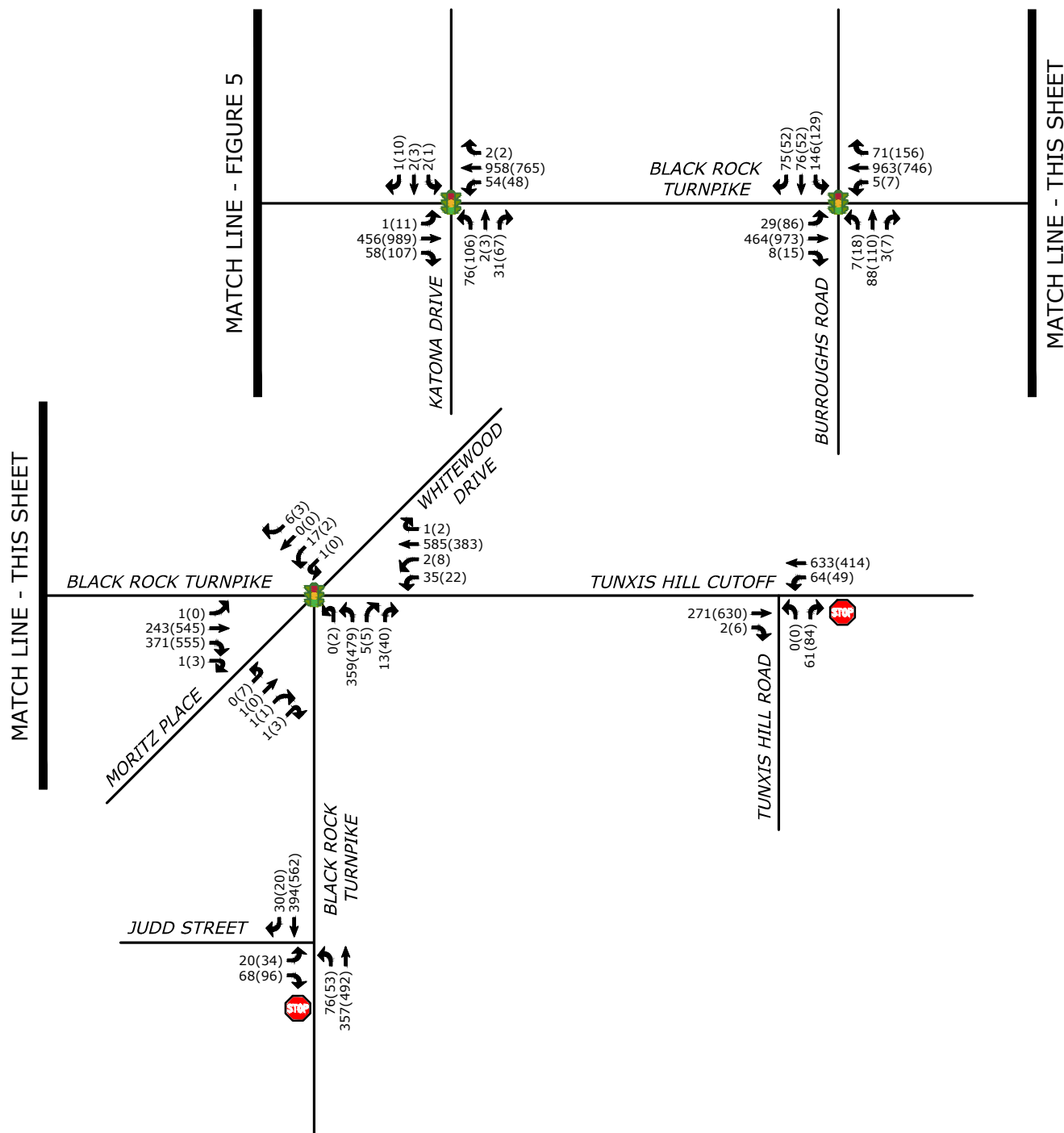
SCALE: NTS

Black Rock Turnpike  
Traffic Study  
Fairfield,  
Connecticut

July 2017

**2040 BACKGROUND  
TRAFFIC VOLUMES  
WEEKDAY MORNING &  
AFTERNOON PEAK HOUR  
PART 2**

**FIGURE 6**





**LEGEND**

VOLUMES: MID (SAT)

-  TRAFFIC SIGNAL
-  STOP SIGN
-  ROUNDABOUT

SCALE: NTS

Black Rock Turnpike  
Traffic Study  
Fairfield,  
Connecticut

July 2017

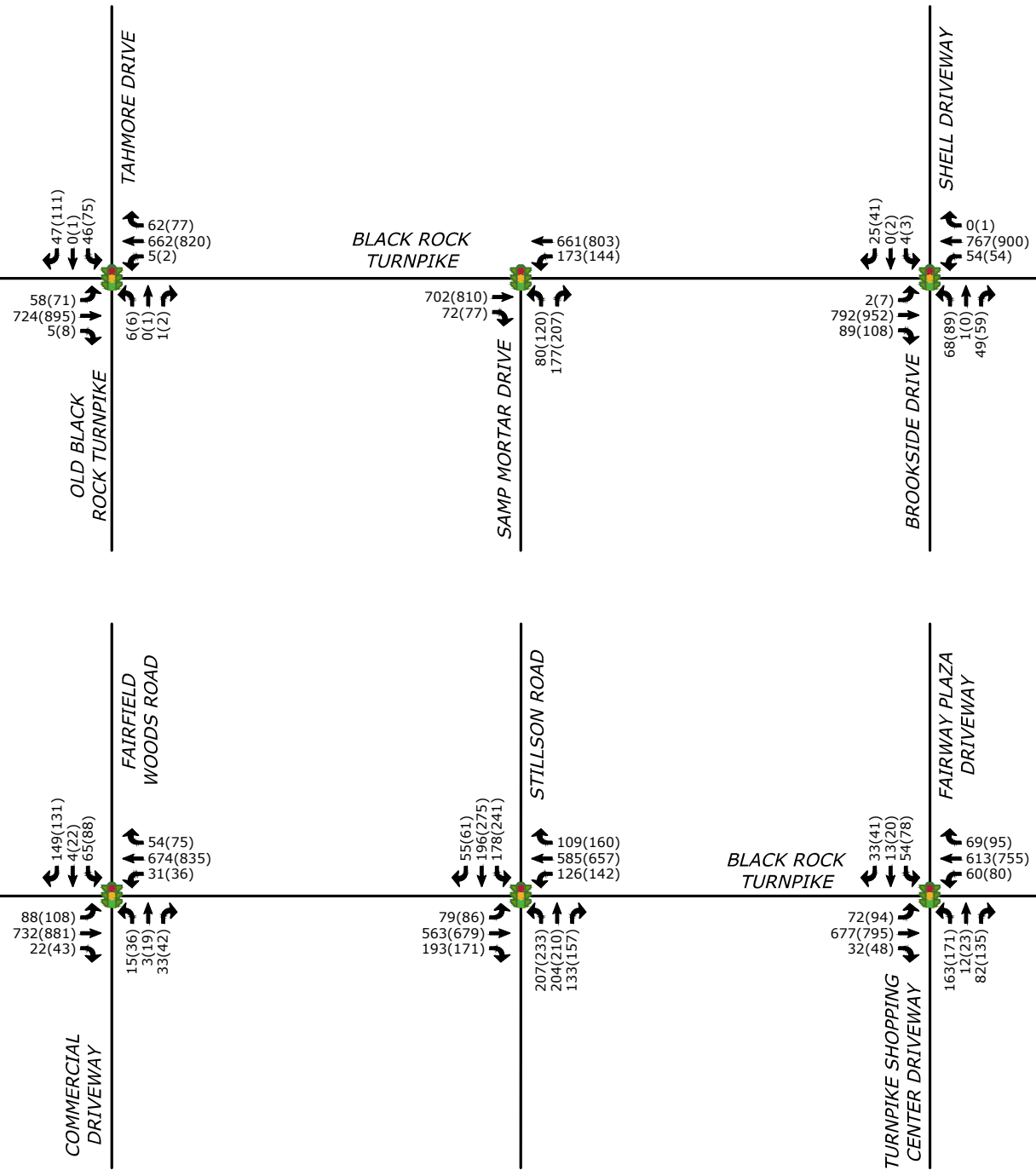
**2040 BACKGROUND  
TRAFFIC VOLUMES  
WEEKDAY MIDDAY &  
SATURDAY PEAK HOUR  
PART 1**

**FIGURE 7**

MATCH LINE - THIS SHEET

MATCH LINE - THIS SHEET

MATCH LINE - FIGURE 8





**LEGEND**

VOLUMES: MID (SAT)

-  TRAFFIC SIGNAL
-  STOP SIGN
-  ROUNDABOUT

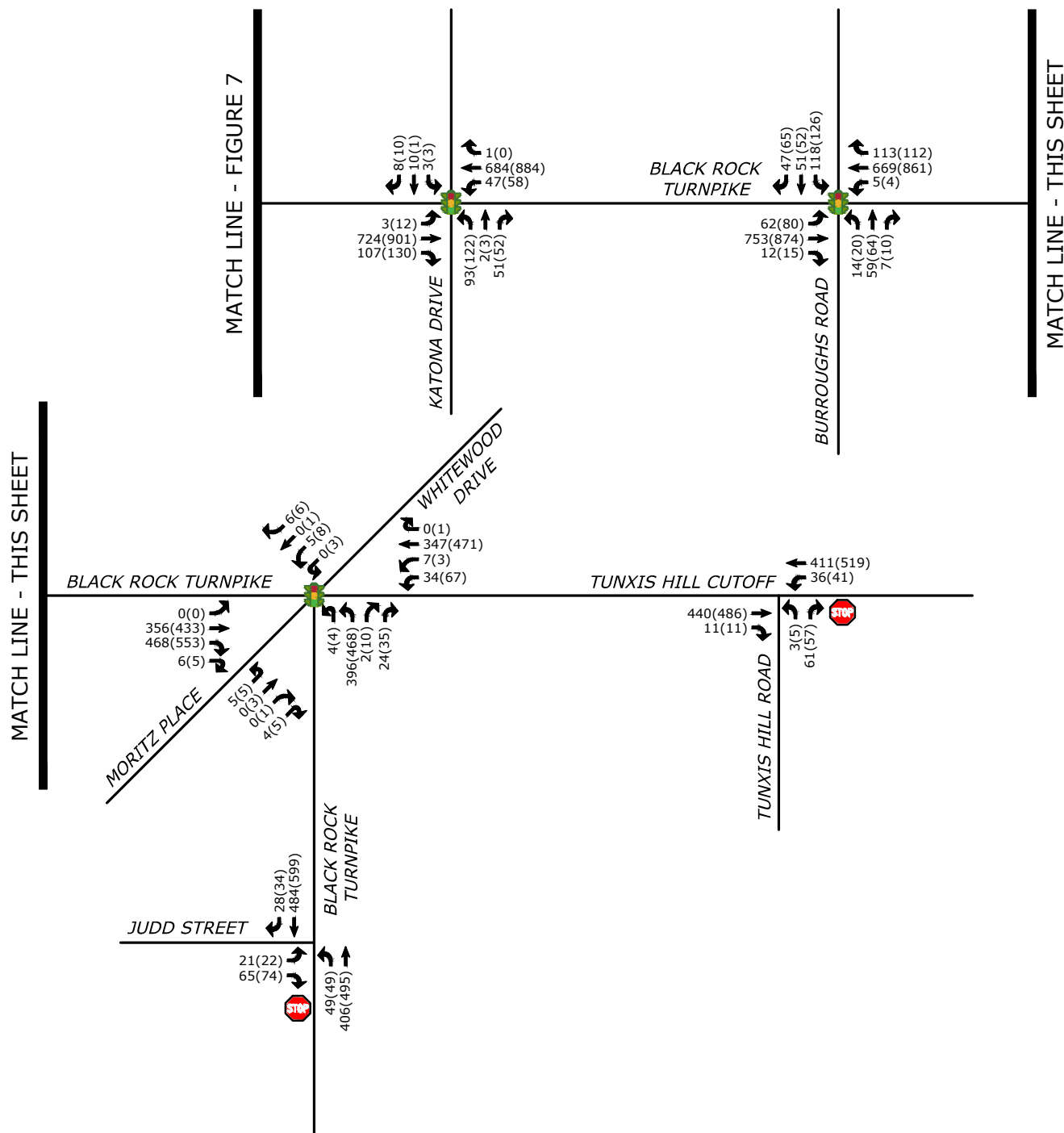
SCALE: NTS

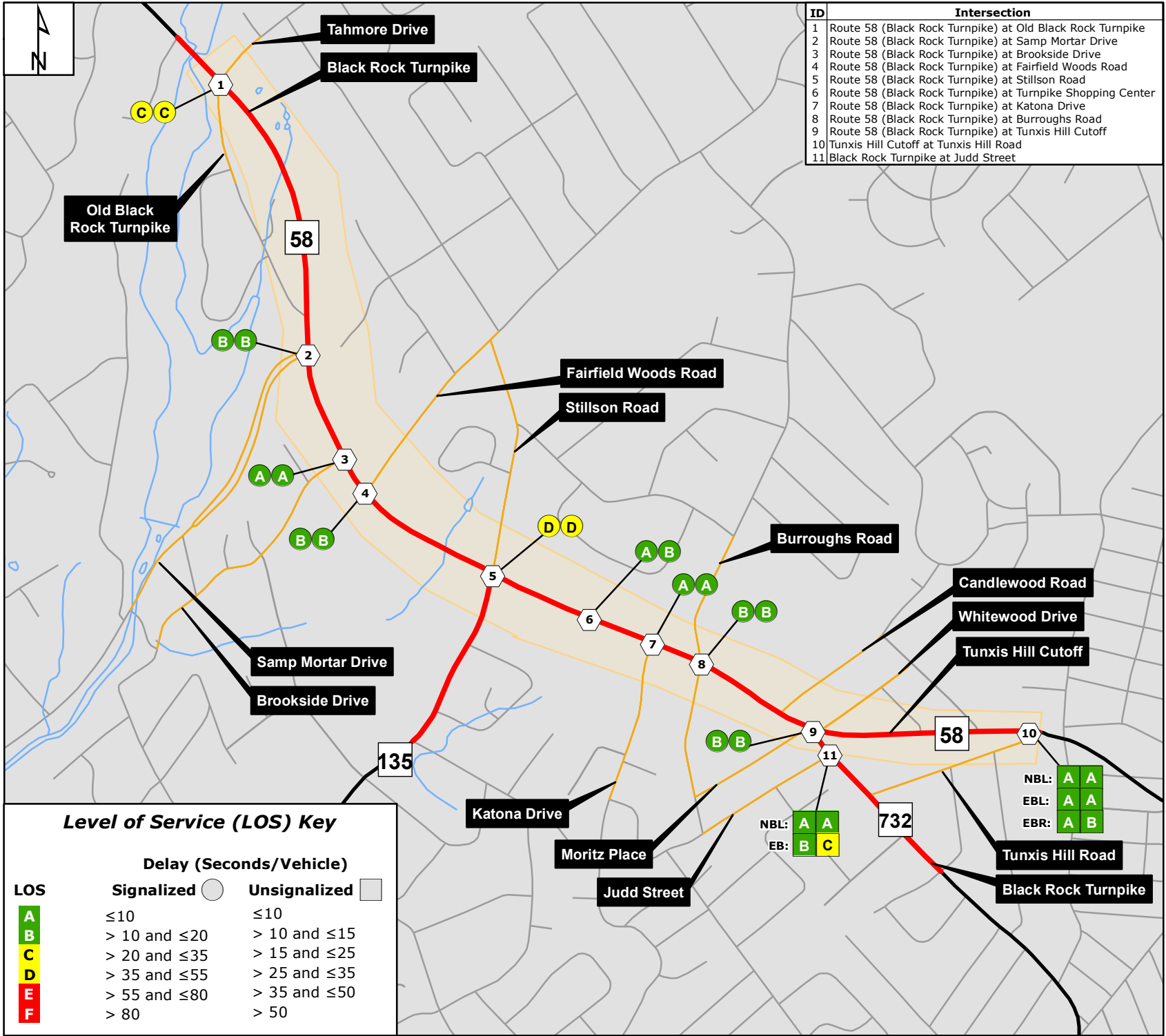
Black Rock Turnpike  
Traffic Study  
Fairfield,  
Connecticut

July 2017

**2040 BACKGROUND  
TRAFFIC VOLUMES  
WEEKDAY MIDDAY &  
SATURDAY PEAK HOUR  
PART 2**

**FIGURE 8**





**LEGEND**

Study Area

Study Area Local Road

Study Area State Route

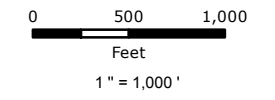
Local Road

State Road

Intersection ID Number

Signalized LOS

Unsignalized LOS

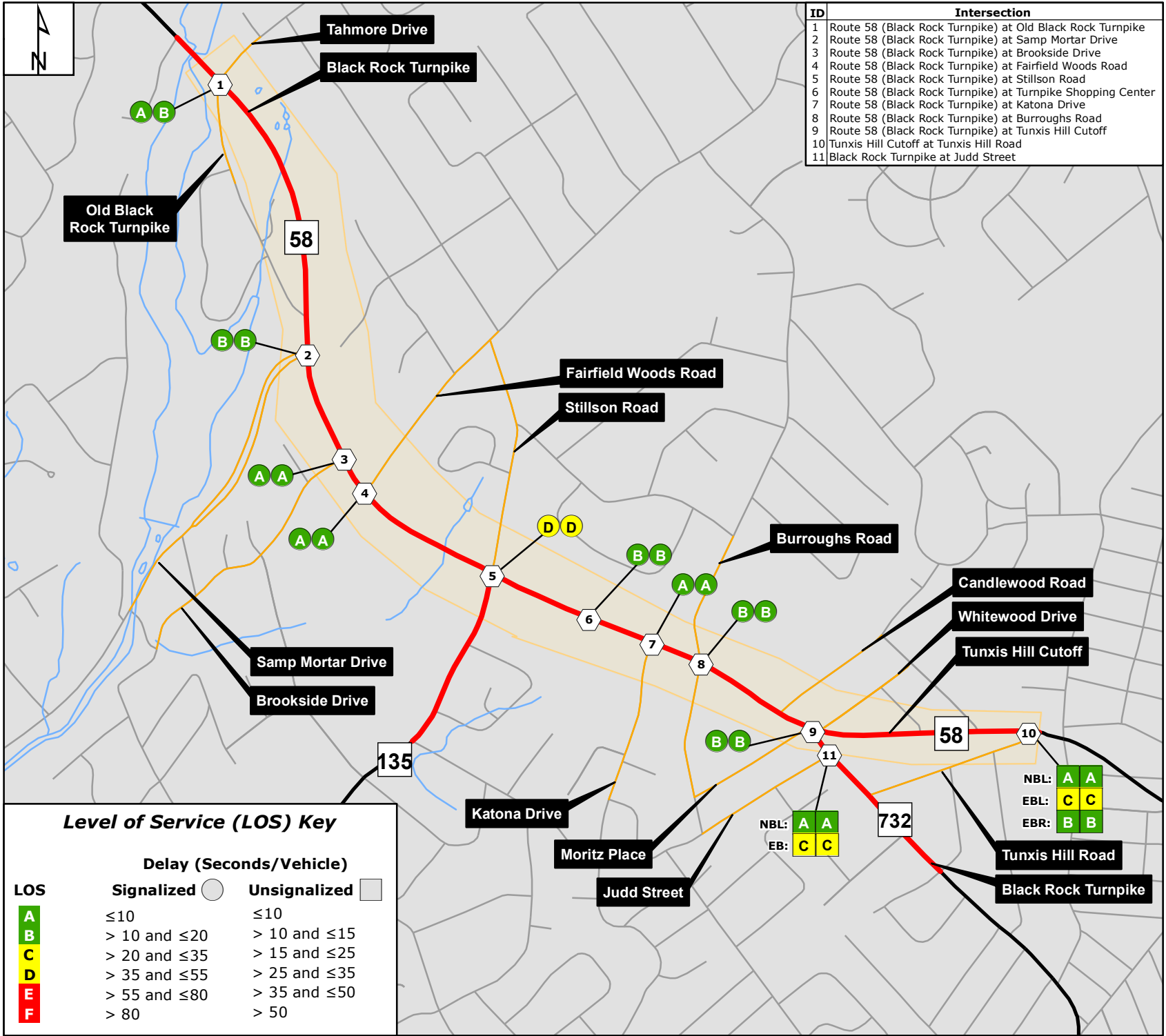


**Regional Transportation and Development Study of Route 58 Fairfield, Connecticut**  
January 2019

**2017 WEEKDAY AM & PM EXISTING TRAFFIC OPERATIONS**

**FIGURE 9**





| ID | Intersection                                               |
|----|------------------------------------------------------------|
| 1  | Route 58 (Black Rock Turnpike) at Old Black Rock Turnpike  |
| 2  | Route 58 (Black Rock Turnpike) at Samp Mortar Drive        |
| 3  | Route 58 (Black Rock Turnpike) at Brookside Drive          |
| 4  | Route 58 (Black Rock Turnpike) at Fairfield Woods Road     |
| 5  | Route 58 (Black Rock Turnpike) at Stillson Road            |
| 6  | Route 58 (Black Rock Turnpike) at Turnpike Shopping Center |
| 7  | Route 58 (Black Rock Turnpike) at Katona Drive             |
| 8  | Route 58 (Black Rock Turnpike) at Burroughs Road           |
| 9  | Route 58 (Black Rock Turnpike) at Tunxis Hill Cutoff       |
| 10 | Tunxis Hill Cutoff at Tunxis Hill Road                     |
| 11 | Black Rock Turnpike at Judd Street                         |

**LEGEND**

Study Area

Study Area Local Road

Study Area State Route

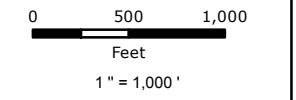
Local Road

State Road

Intersection ID Number

Signalized LOS

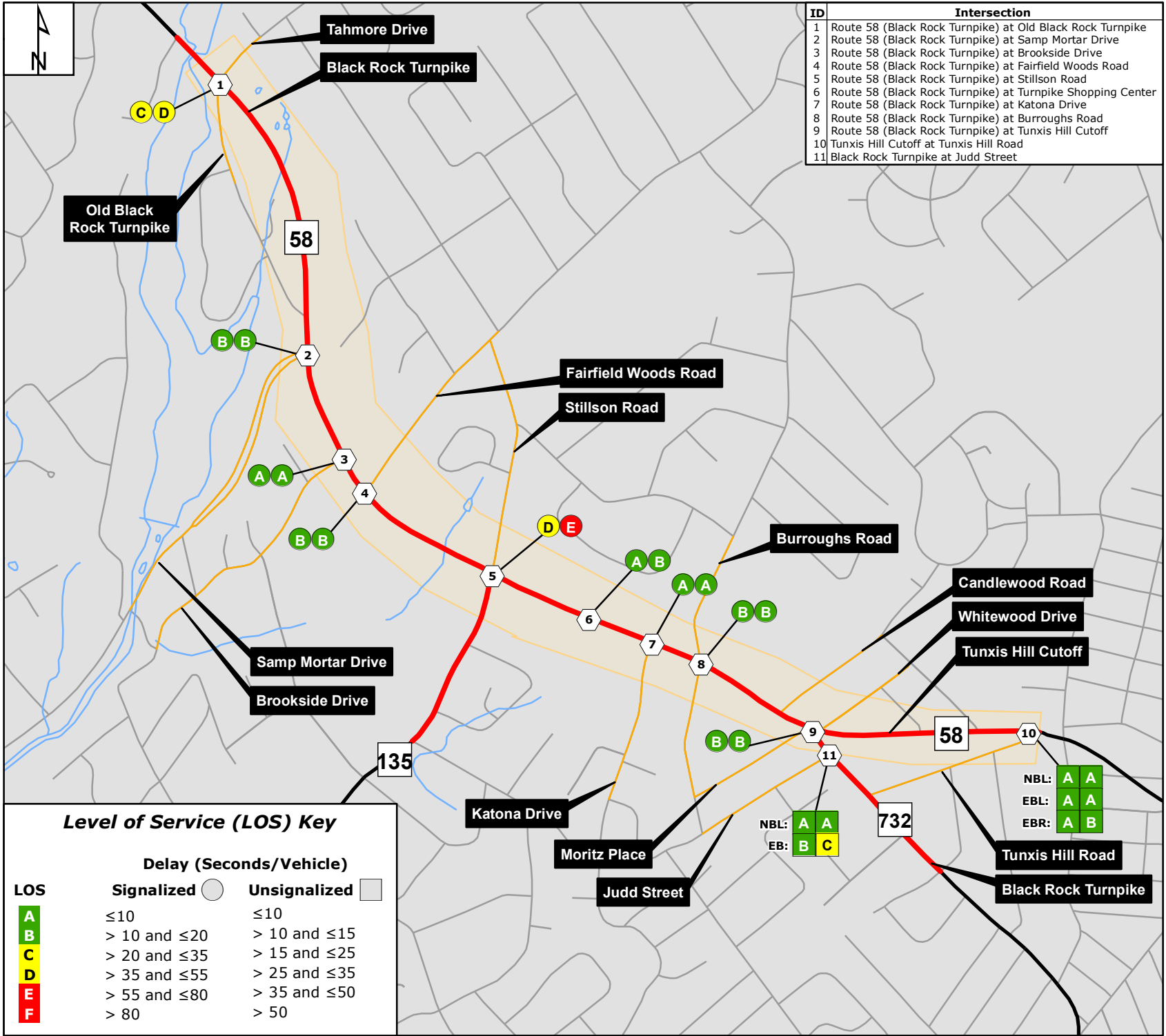
Unsignalized LOS



**Regional Transportation and Development Study of Route 58 Fairfield, Connecticut**  
January 2019

**2017 WEEKDAY MIDDAY & SATURDAY EXISTING TRAFFIC OPERATIONS**

**FIGURE 10**



**LEGEND**

Study Area

Study Area Local Road

Study Area State Route

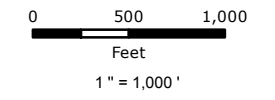
Local Road

State Road

Intersection ID Number

Signalized LOS (AM, PM)

Unsignalized LOS (AM, PM)

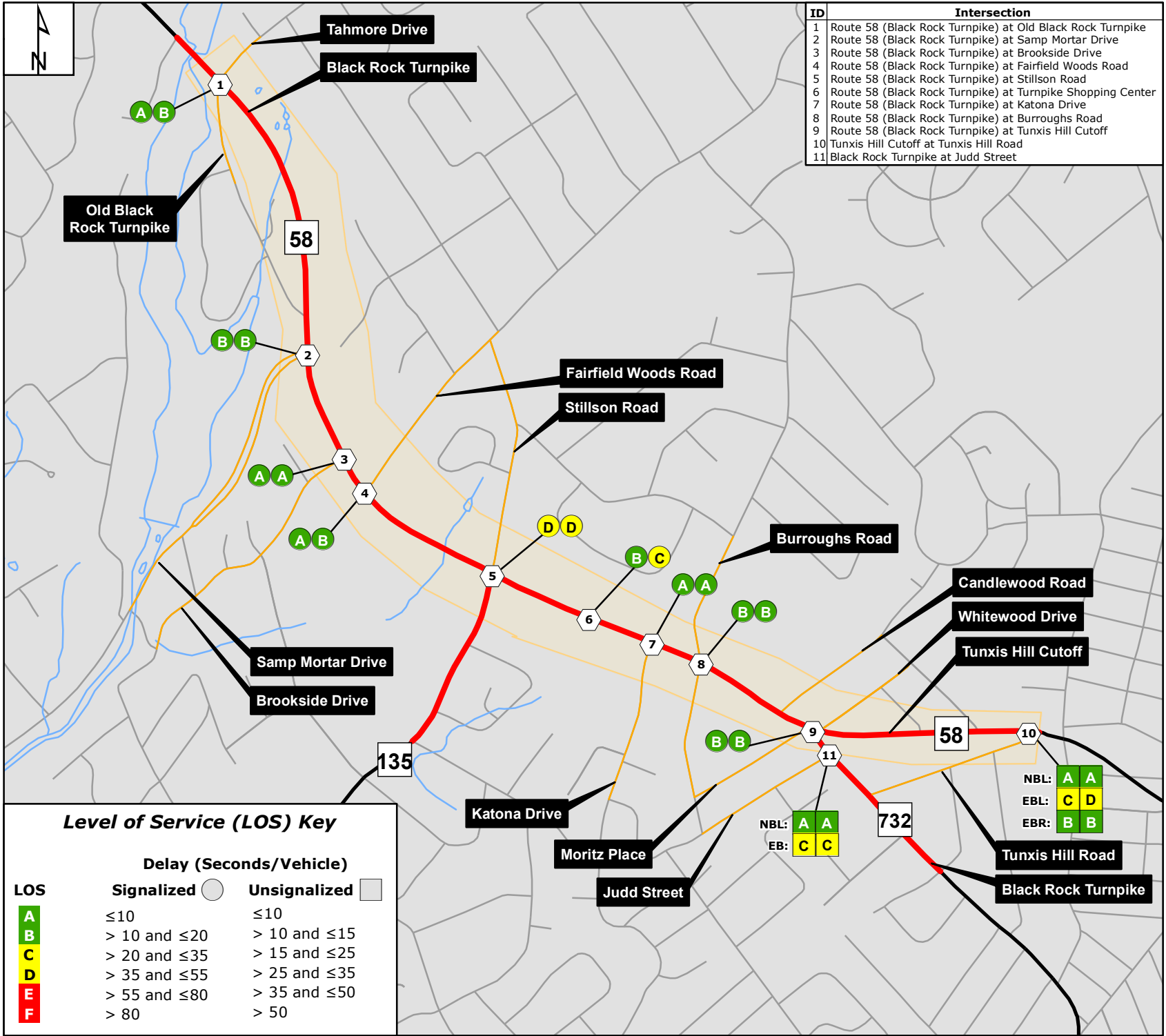


**Regional Transportation and Development Study of Route 58 Fairfield, Connecticut**  
January 2019

**2040 WEEKDAY AM & PM BACKGROUND TRAFFIC OPERATIONS**

**FIGURE 11**





Engineers | Environmental Specialists

**LEGEND**

Study Area

Study Area Local Road

Study Area State Route

Local Road

State Road

Intersection ID Number

Signalized LOS

Unsignalized LOS

0 500 1,000

Feet

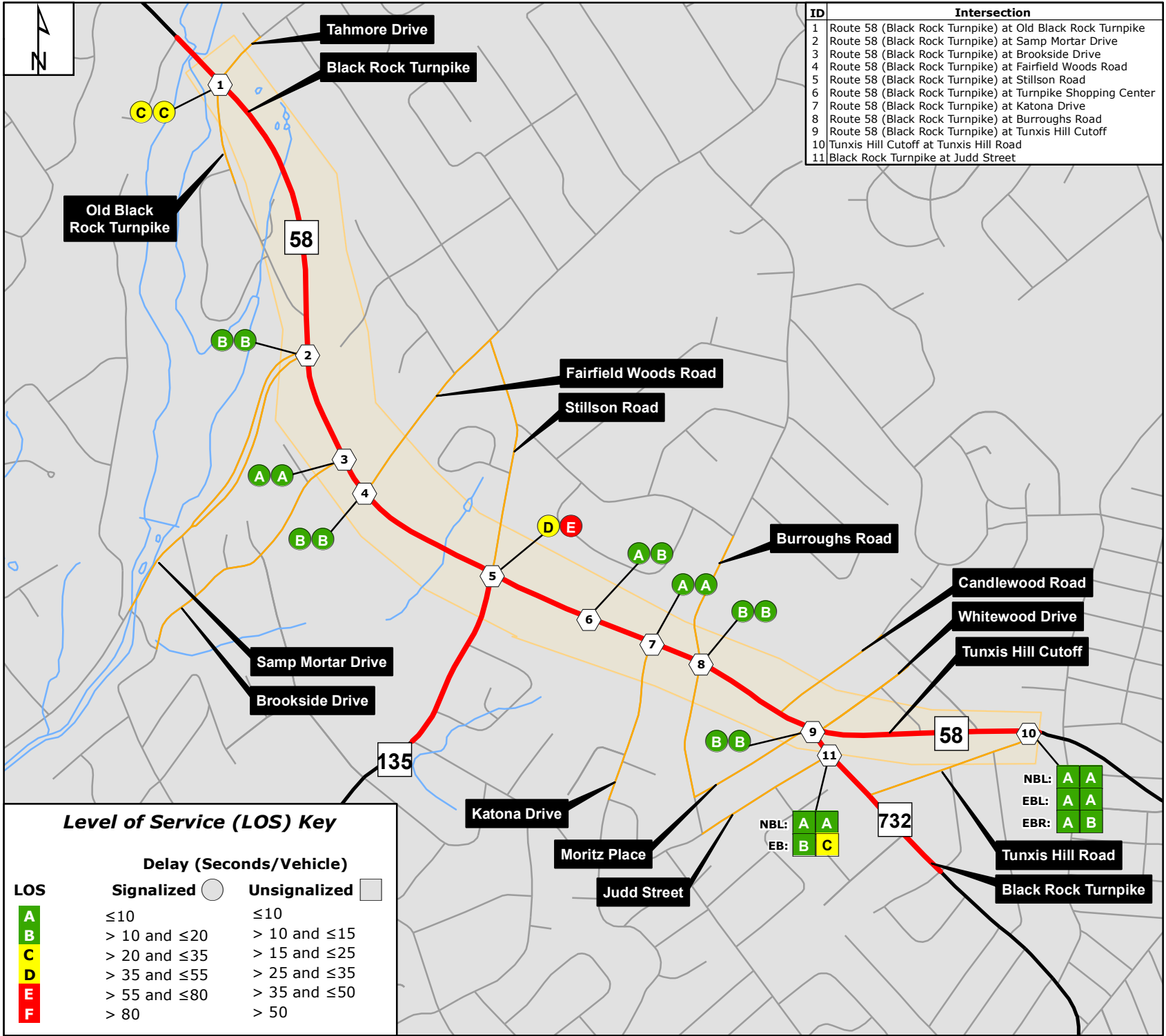
1" = 1,000'

**Regional Transportation and Development Study of Route 58 Fairfield, Connecticut**

January 2019

**2040 WEEKDAY MIDDAY & SATURDAY BACKGROUND TRAFFIC OPERATIONS**

**FIGURE 12**



| ID | Intersection                                               |
|----|------------------------------------------------------------|
| 1  | Route 58 (Black Rock Turnpike) at Old Black Rock Turnpike  |
| 2  | Route 58 (Black Rock Turnpike) at Samp Mortar Drive        |
| 3  | Route 58 (Black Rock Turnpike) at Brookside Drive          |
| 4  | Route 58 (Black Rock Turnpike) at Fairfield Woods Road     |
| 5  | Route 58 (Black Rock Turnpike) at Stillson Road            |
| 6  | Route 58 (Black Rock Turnpike) at Turnpike Shopping Center |
| 7  | Route 58 (Black Rock Turnpike) at Katona Drive             |
| 8  | Route 58 (Black Rock Turnpike) at Burroughs Road           |
| 9  | Route 58 (Black Rock Turnpike) at Tunxis Hill Cutoff       |
| 10 | Tunxis Hill Cutoff at Tunxis Hill Road                     |
| 11 | Black Rock Turnpike at Judd Street                         |

**LEGEND**

Study Area

Study Area Local Road

Study Area State Route

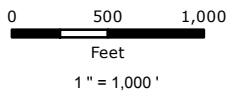
Local Road

State Road

Intersection ID Number

Signalized LOS

Unsignalized LOS

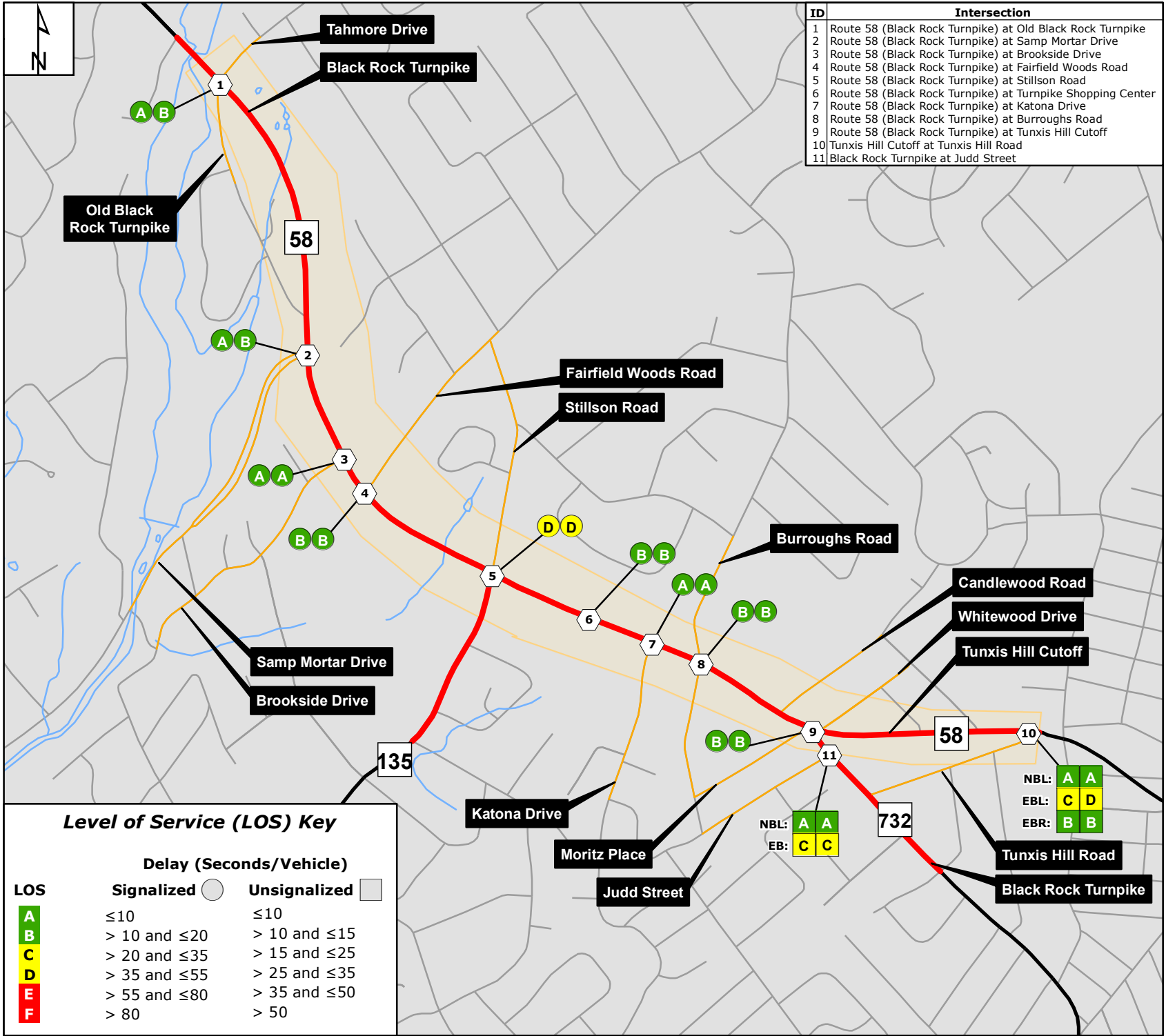


**Regional Transportation and Development Study of Route 58 Fairfield, Connecticut**  
January 2019

**2040 WEEKDAY AM & PM BACKGROUND OPTIMIZED TRAFFIC OPERATIONS**

**FIGURE 13**





**LEGEND**

Study Area

Study Area Local Road

Study Area State Route

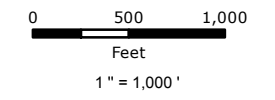
Local Road

State Road

Intersection ID Number

Signalized LOS

Unsignalized LOS



**Regional Transportation and Development Study of Route 58 Fairfield, Connecticut**  
January 2019

**2040 WEEKDAY MIDDAY & SATURDAY BACKGROUND OPTIMIZED TRAFFIC OPERATIONS**

**FIGURE 14**



**LEGEND**

VOLUMES: AM (PM)

-  TRAFFIC SIGNAL
-  STOP SIGN
-  ROUNDABOUT

SCALE: NTS

Black Rock Turnpike  
Traffic Study  
Fairfield,  
Connecticut  
  
July 2017

**2040 CONCEPT A  
TRAFFIC VOLUMES  
WEEKDAY MORNING &  
AFTERNOON PEAK HOUR  
PART 1**

**FIGURE 15**

MATCH LINE - THIS SHEET



MATCH LINE - THIS SHEET

MATCH LINE - FIGURE 10





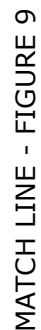
SCALE: NTS

# Black Rock Turnpike Traffic Study Fairfield, Connecticut

July 2017

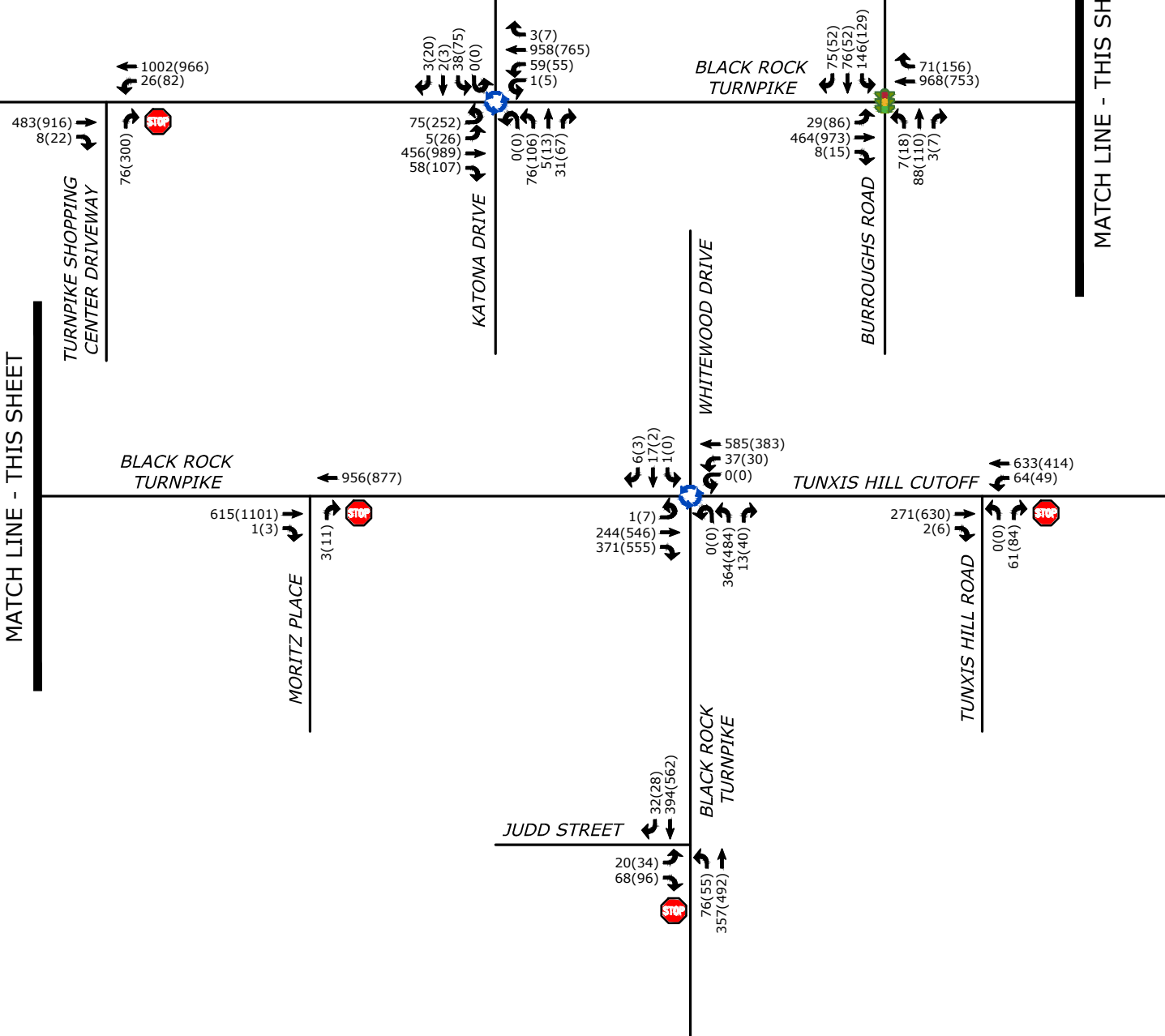
**2040 CONCEPT A  
TRAFFIC VOLUMES  
WEEKDAY MORNING &  
AFTERNOON PEAK HOUR  
PART 2**

**FIGURE 16**



MATCH LINE - THIS SHEET

MATCH LINE - THIS SHEET



**LEGEND**

VOLUMES: MID (SAT)

-  TRAFFIC SIGNAL
-  STOP SIGN
-  ROUNDABOUT

SCALE: NTS

Black Rock Turnpike  
Traffic Study  
Fairfield,  
Connecticut

July 2017

**2040 CONCEPT A  
TRAFFIC VOLUMES  
WEEKDAY MIDDAY &  
SATURDAY PEAK HOUR  
PART 1**

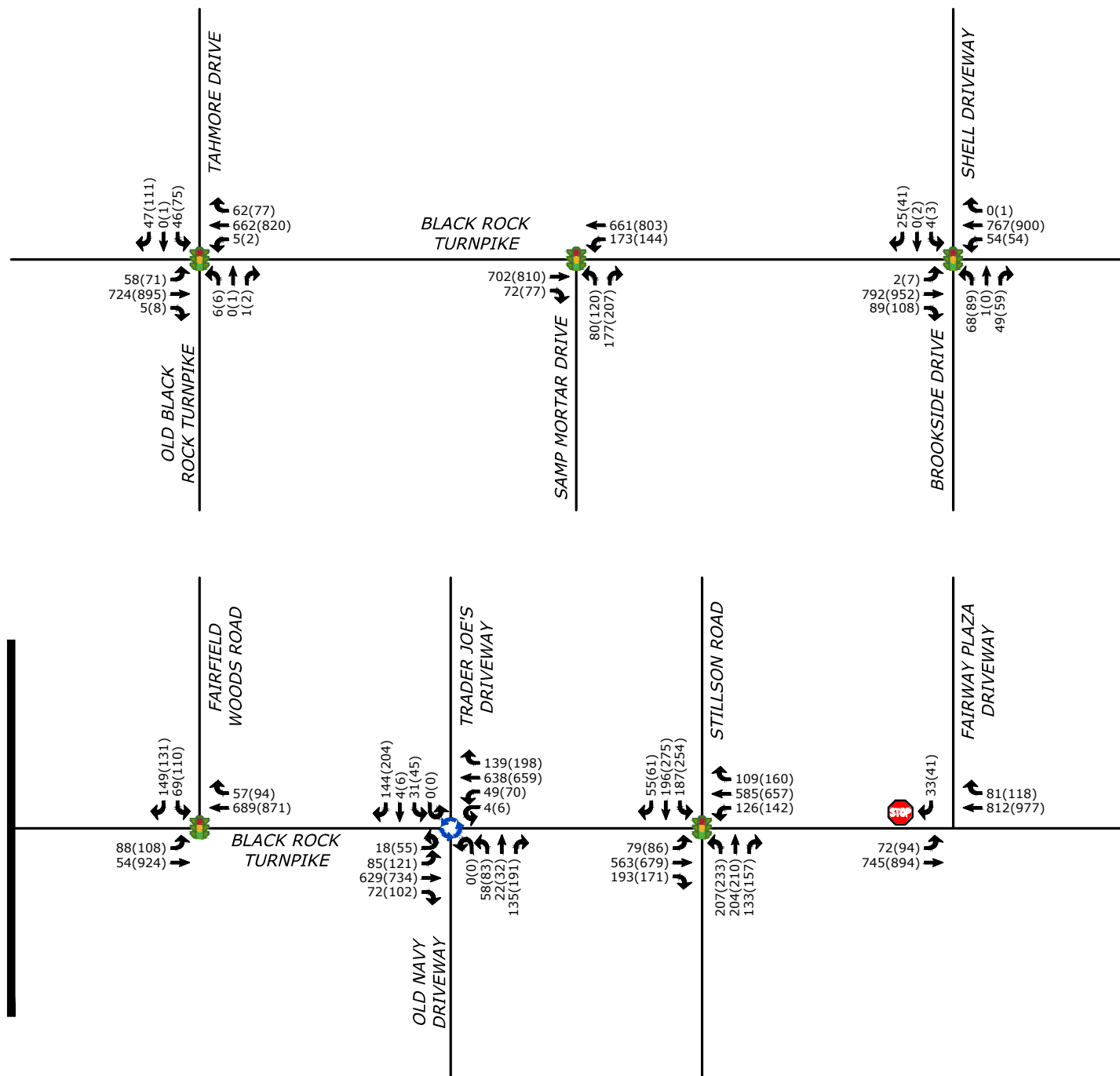
**FIGURE 17**



MATCH LINE - THIS SHEET

MATCH LINE - FIGURE 12

MATCH LINE - THIS SHEET





MATCH LINE - FIGURE 11

MATCH LINE - THIS SHEET

TURNPIKE SHOPPING  
CENTER DRIVEWAY

BLACK ROCK  
TURNPIKE

MORITZ PLACE

KATONA DRIVE

JUDD STREET

WHITEWOOD DRIVE

BLACK ROCK  
TURNPIKE

BLACK ROCK  
TURNPIKE

TUNXIS HILL CUTOFF

TUNXIS HILL ROAD

BURROUGHS ROAD

MATCH LINE - THIS SHEET



**LEGEND**

VOLUMES: MID (SAT)

-  TRAFFIC SIGNAL
-  STOP SIGN
-  ROUNDABOUT

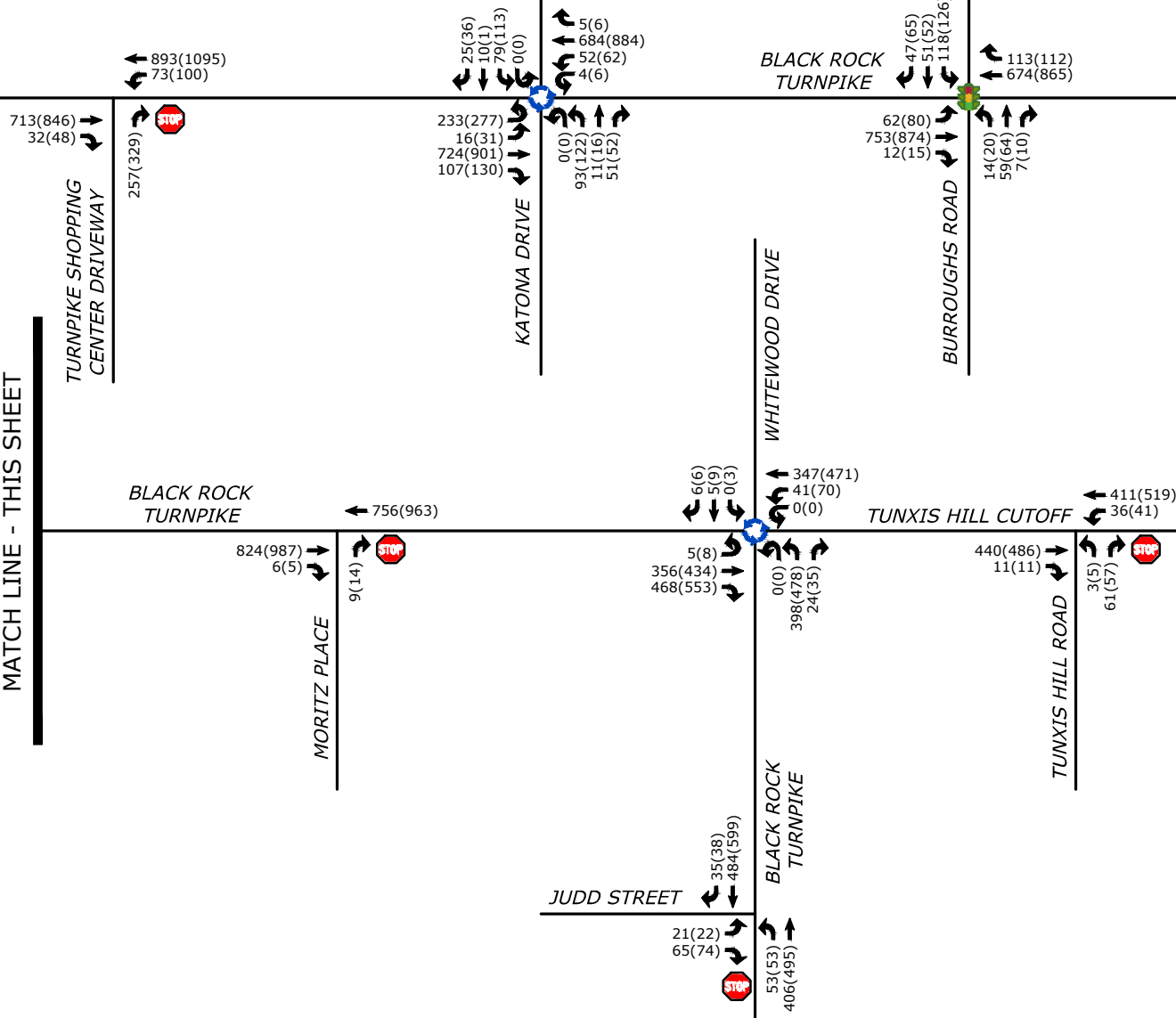
SCALE: NTS

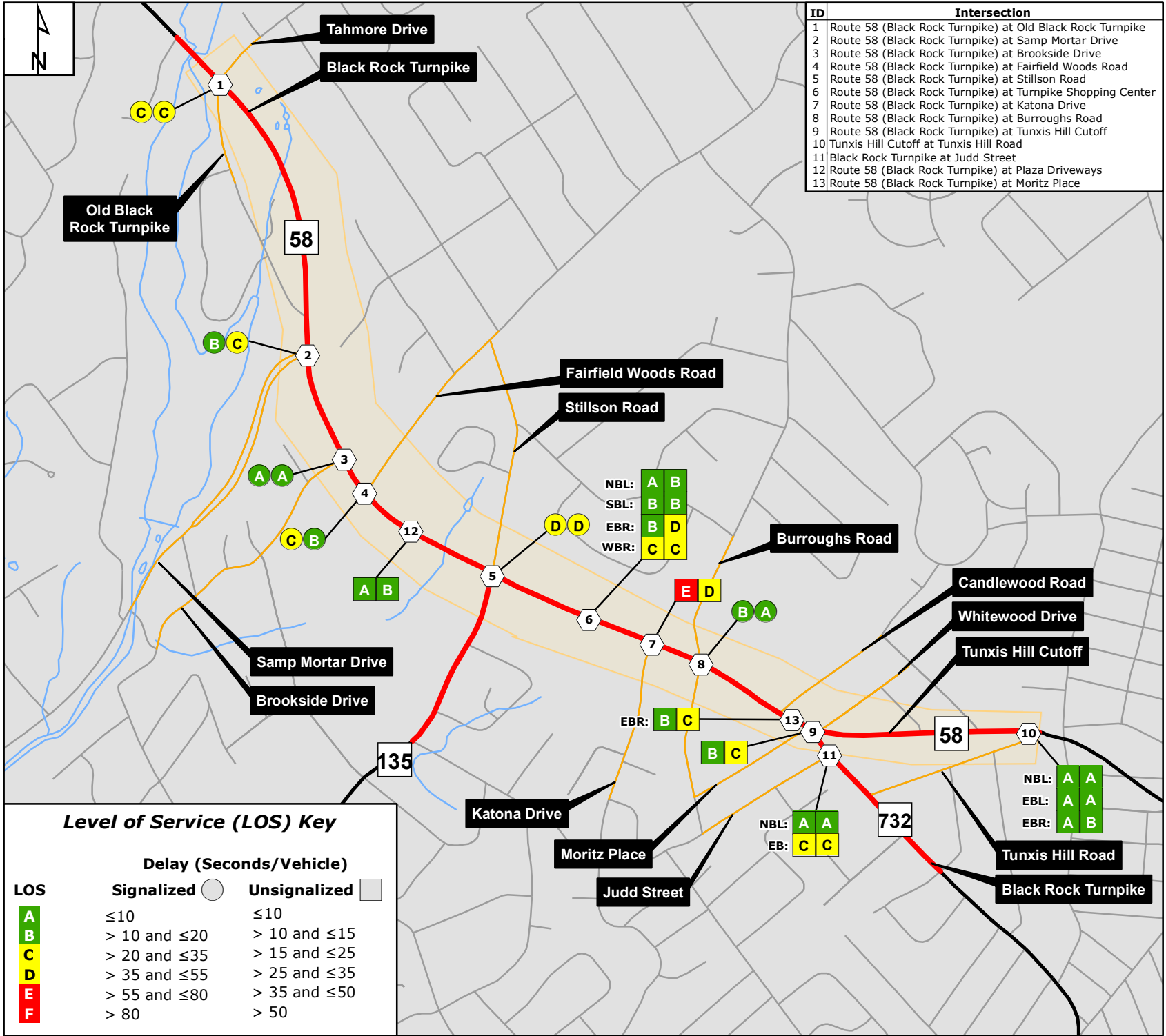
Black Rock Turnpike  
Traffic Study  
Fairfield,  
Connecticut

July 2017

**2040 CONCEPT A  
TRAFFIC VOLUMES  
WEEKDAY MIDDAY &  
SATURDAY PEAK HOUR  
PART 2**

**FIGURE 18**





**LEGEND**

Study Area

Study Area Local Road

Study Area State Route

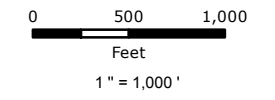
Local Road

State Road

Intersection ID Number

Signalized LOS

Unsignalized LOS

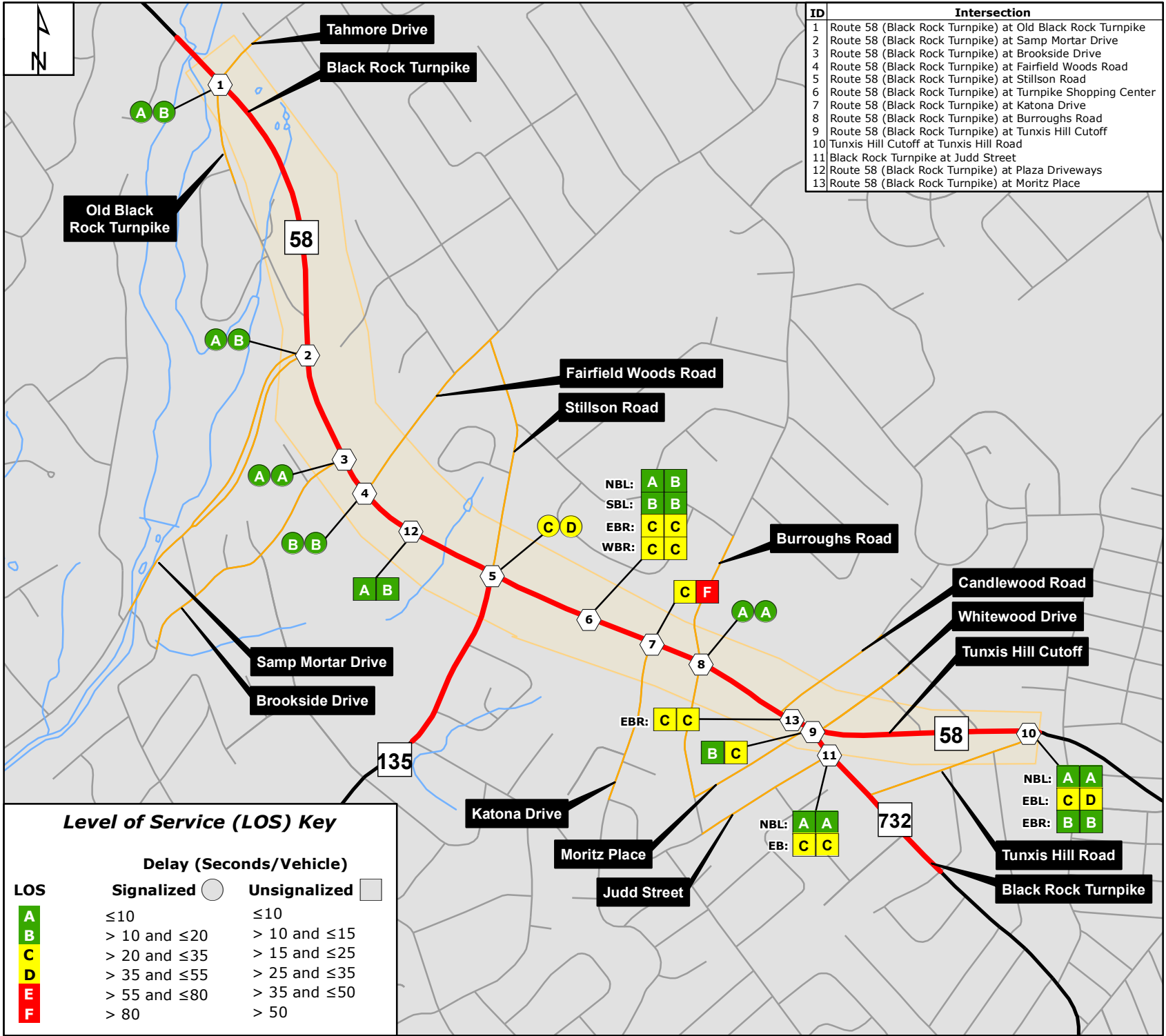


**Regional Transportation and Development Study of Route 58**  
**Fairfield, Connecticut**  
January 2019

**2040 WEEKDAY AM & PM CONCEPT A TRAFFIC OPERATIONS**

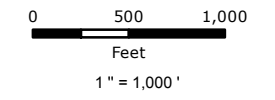
**FIGURE 19**





**LEGEND**

- Study Area
- Study Area Local Road
- Study Area State Route
- Local Road
- State Road
- Intersection ID Number
- Signalized LOS (MID, SAT)
- Unsignalized LOS (MID, SAT)

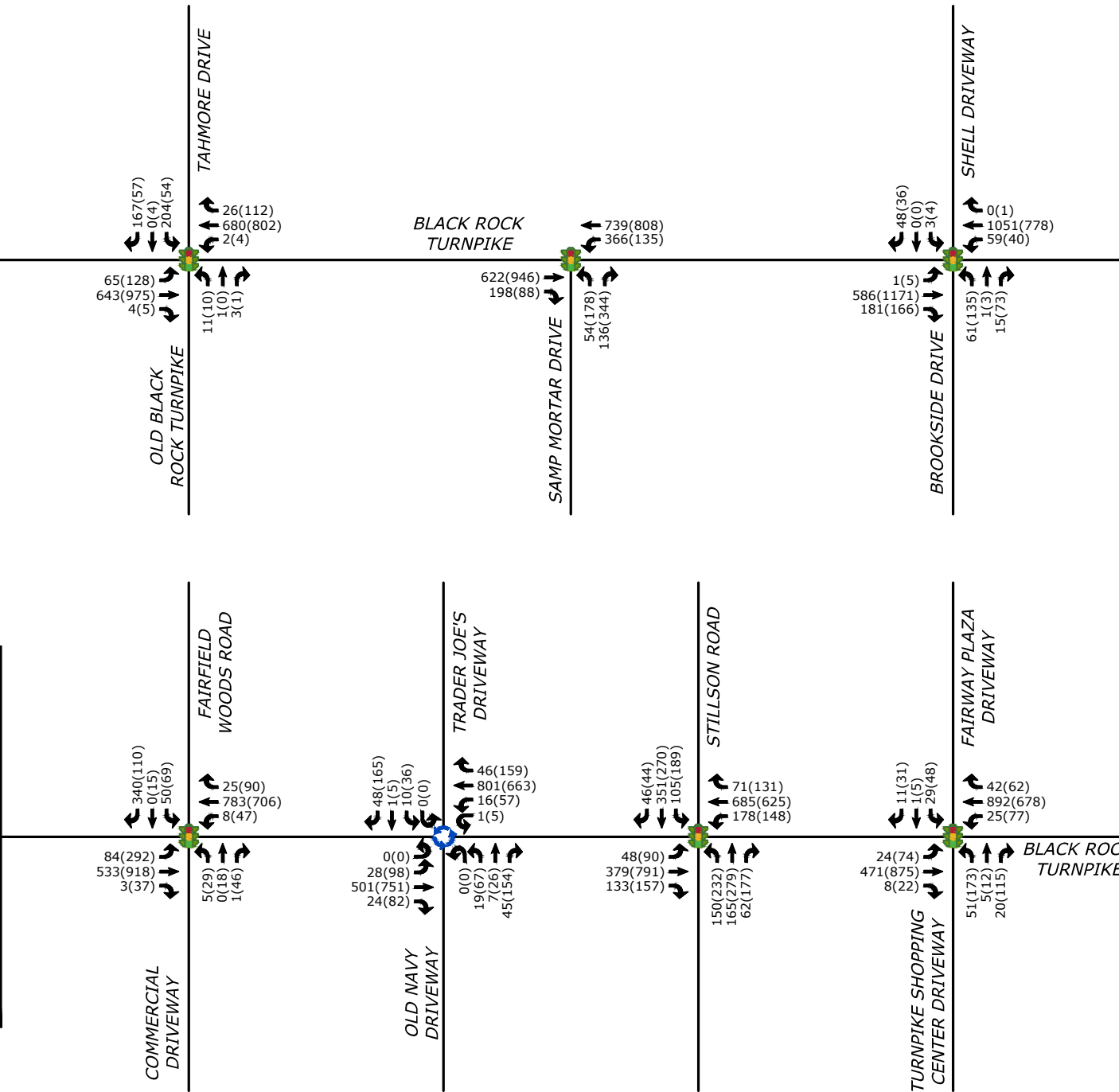


**Regional Transportation and Development Study of Route 58 Fairfield, Connecticut**  
January 2019

**2040 WEEKDAY MIDDAY & SATURDAY CONCEPT A TRAFFIC OPERATIONS**

**FIGURE 20**

MATCH LINE - THIS SHEET



MATCH LINE - THIS SHEET

MATCH LINE - FIGURE 14

**LEGEND**

VOLUMES: AM (PM)

- TRAFFIC SIGNAL
- STOP SIGN
- ROUNDABOUT

SCALE: NTS

Black Rock Turnpike  
Traffic Study  
Fairfield,  
Connecticut

July 2017

**2040 CONCEPT B  
TRAFFIC VOLUMES  
WEEKDAY MORNING &  
AFTERNOON PEAK HOUR  
PART 1**

**FIGURE 21**



**LEGEND**

VOLUMES: AM (PM)

-  TRAFFIC SIGNAL
-  STOP SIGN
-  ROUNDABOUT

SCALE: NTS

Black Rock Turnpike  
Traffic Study  
Fairfield,  
Connecticut

July 2017

**2040 CONCEPT B  
TRAFFIC VOLUMES  
WEEKDAY MORNING &  
AFTERNOON PEAK HOUR  
PART 2**

**FIGURE 22**



**LEGEND**

VOLUMES: MID (SAT)

-  TRAFFIC SIGNAL
-  STOP SIGN
-  ROUNDABOUT

SCALE: NTS

Black Rock Turnpike  
Traffic Study  
Fairfield,  
Connecticut

July 2017

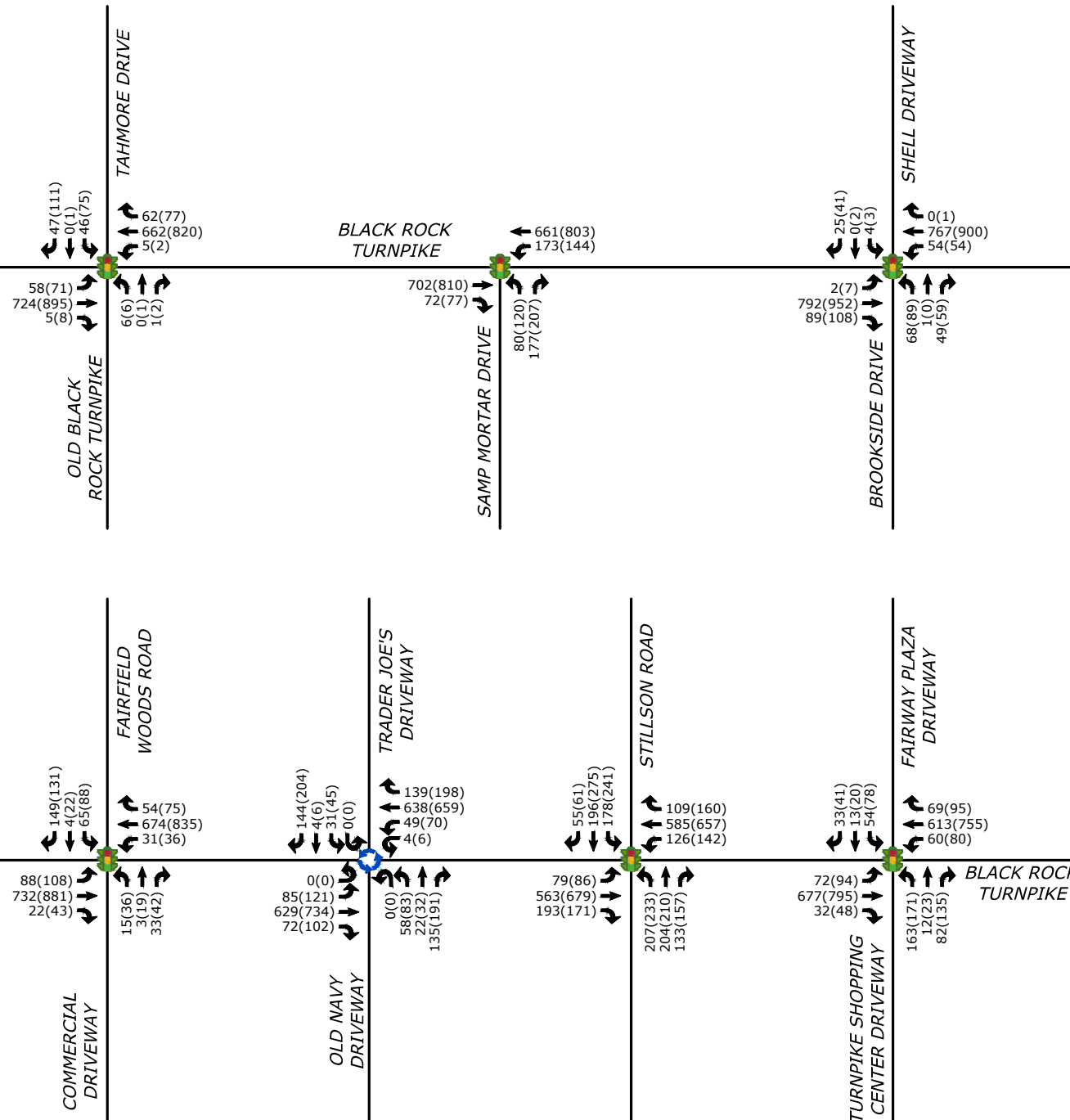
**2040 CONCEPT B  
TRAFFIC VOLUMES  
WEEKDAY MIDDAY &  
SATURDAY PEAK HOUR  
PART 1**

**FIGURE 23**

MATCH LINE - THIS SHEET

MATCH LINE - FIGURE 16

MATCH LINE - THIS SHEET





**LEGEND**

VOLUMES: MID (SAT)

-  TRAFFIC SIGNAL
-  STOP SIGN
-  ROUNDABOUT

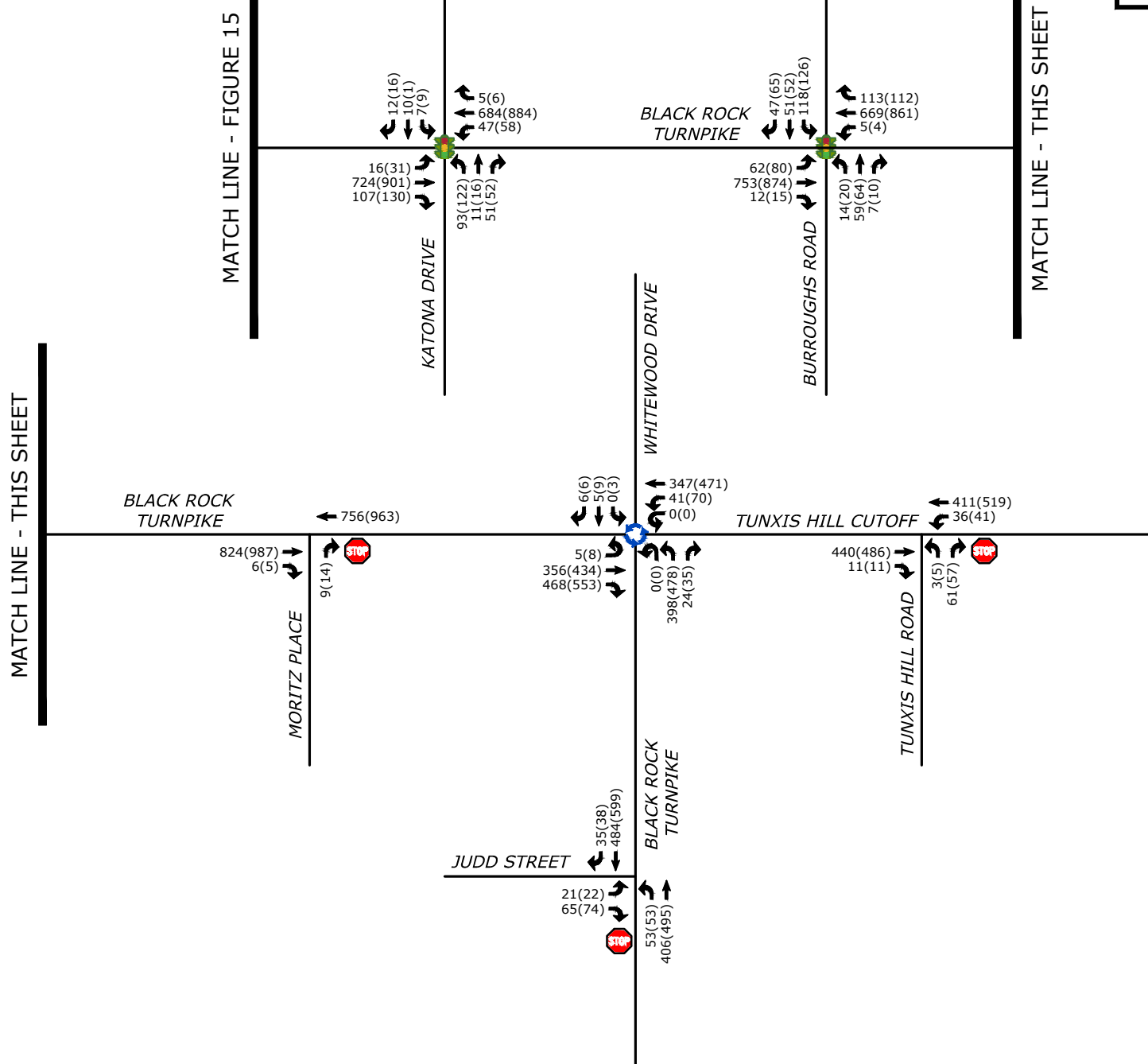
SCALE: NTS

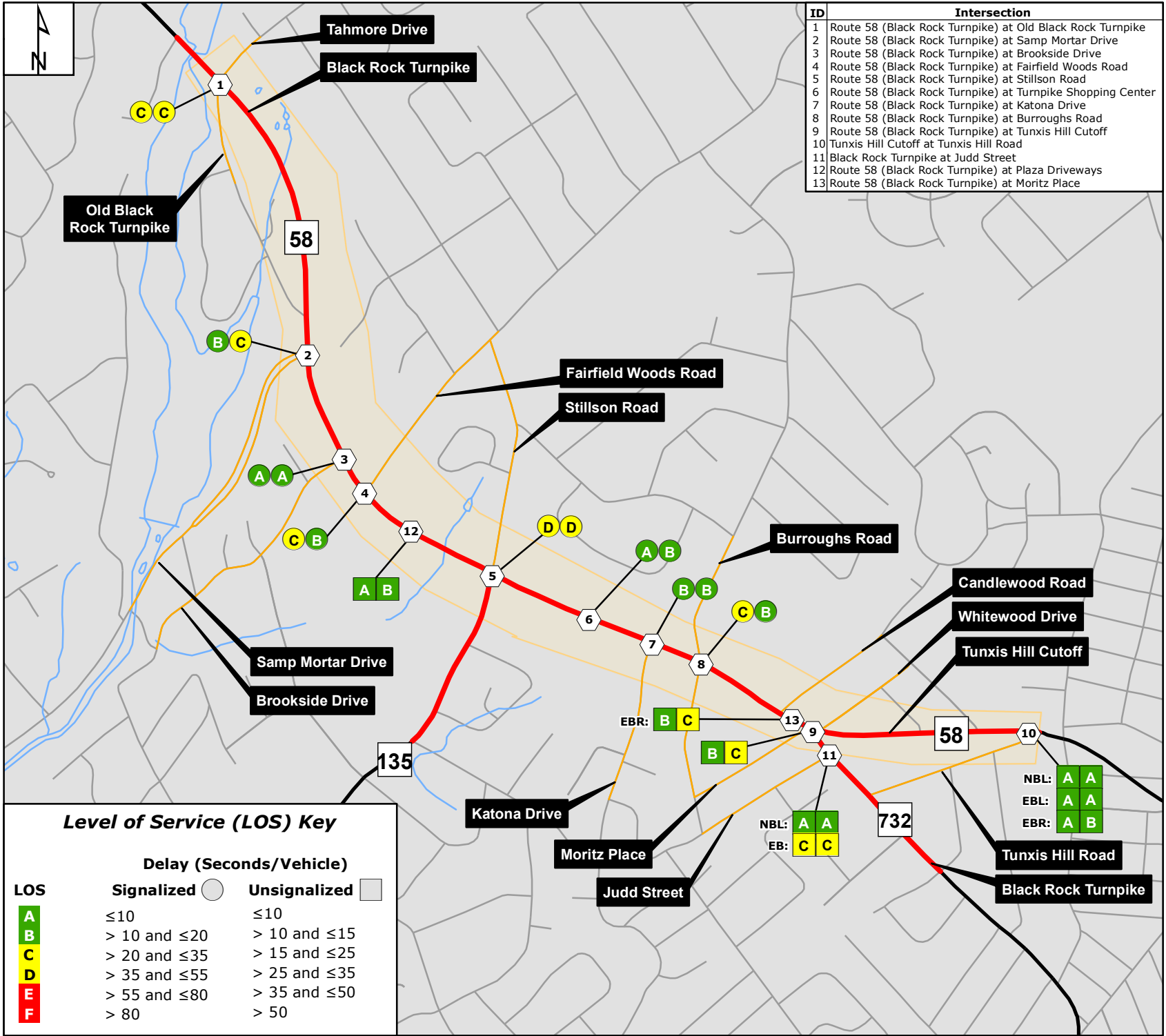
Black Rock Turnpike  
Traffic Study  
Fairfield,  
Connecticut

July 2017

**2040 CONCEPT B  
TRAFFIC VOLUMES  
WEEKDAY MIDDAY &  
SATURDAY PEAK HOUR  
PART 2**

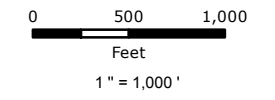
**FIGURE 24**





**LEGEND**

- Study Area
- Study Area Local Road
- Study Area State Route
- Local Road
- State Road
- Intersection ID Number
- Signalized LOS (AM, PM)
- Unsignalized LOS (AM, PM)

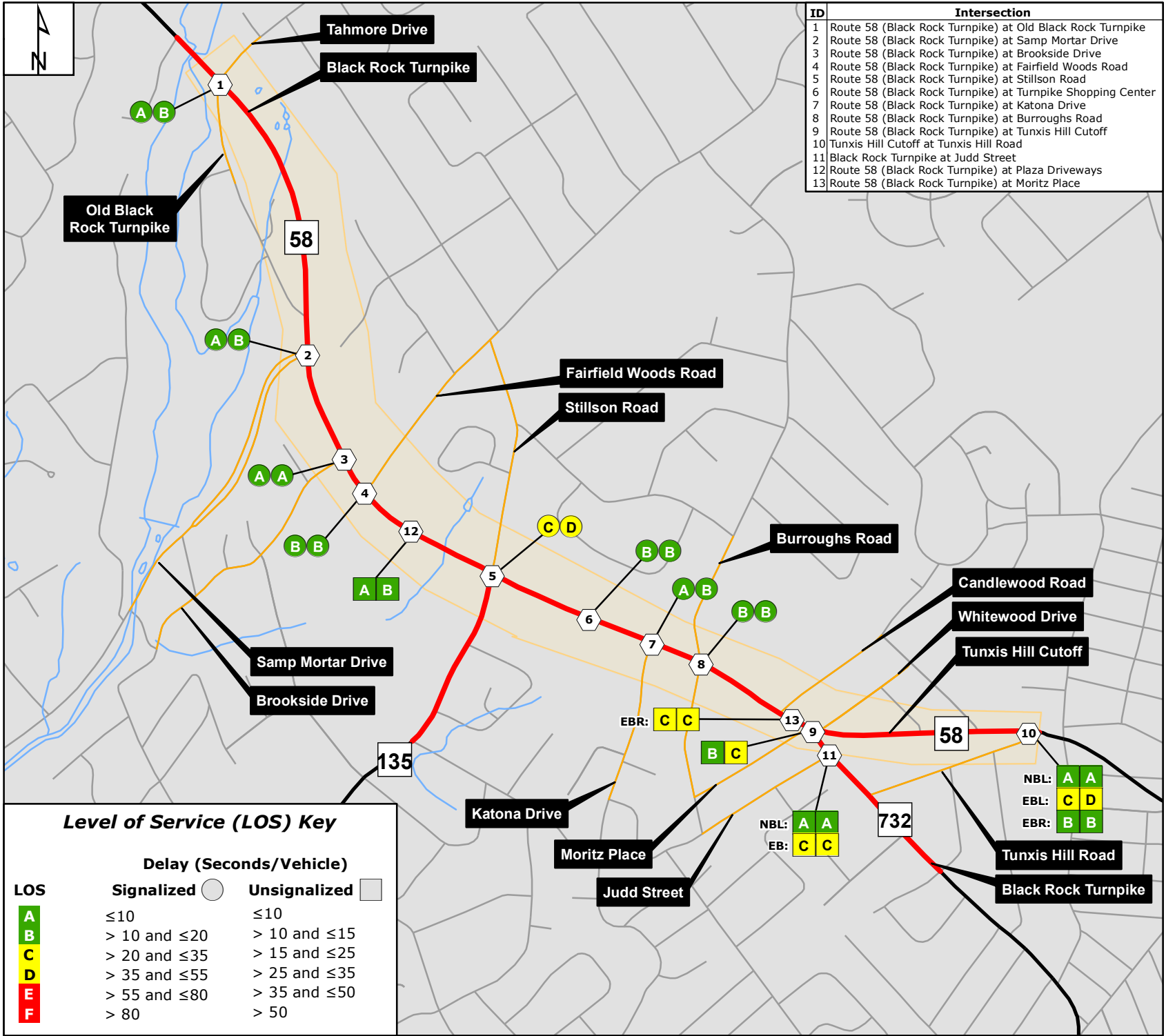


**Regional Transportation and Development Study of Route 58 Fairfield, Connecticut**  
January 2019

**2040 WEEKDAY AM & PM CONCEPT B TRAFFIC OPERATIONS**

**FIGURE 25**





**LEGEND**

Study Area

Study Area Local Road

Study Area State Route

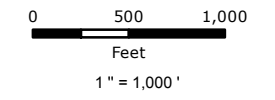
Local Road

State Road

Intersection ID Number

Signalized LOS

Unsignalized LOS



**Regional Transportation and Development Study of Route 58 Fairfield, Connecticut**  
January 2019

**2040 WEEKDAY MIDDAY & SATURDAY CONCEPT B TRAFFIC OPERATIONS**

**FIGURE 26**

## **TABLES**



TABLE 1

2017 Existing Conditions - Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh)

|                                                                                            |             | Weekday Morning<br>Peak Hour |                       | Weekday Midday<br>Peak Hour |                       | Weekday Afternoon<br>Peak Hour |                       | Saturday Midday<br>Peak Hour |                       |
|--------------------------------------------------------------------------------------------|-------------|------------------------------|-----------------------|-----------------------------|-----------------------|--------------------------------|-----------------------|------------------------------|-----------------------|
|                                                                                            | Lane<br>Use | LOS                          | Avg. Delay<br>(s/veh) | LOS                         | Avg. Delay<br>(s/veh) | LOS                            | Avg. Delay<br>(s/veh) | LOS                          | Avg. Delay<br>(s/veh) |
| Traffic Signal - Black Rock Turnpike at Old Black Rock Turnpike & Tahmore Drive            |             |                              |                       |                             |                       |                                |                       |                              |                       |
| Overall                                                                                    |             | C                            | 22.2                  | A                           | 8.1                   | C                              | 29.3                  | B                            | 16.3                  |
| Old Black Rock Turnpike                                                                    | EB          | B                            | 17.1                  | A                           | 0.1                   | A                              | 1.0                   | B                            | 20.0                  |
| Tahmore Drive                                                                              | WB          | D                            | 44.5                  | B                           | 15.0                  | C                              | 20.2                  | C                            | 22.1                  |
| Black Rock Turnpike                                                                        | NB          | B                            | 13.2                  | A                           | 6.7                   | A                              | 7.8                   | B                            | 10.9                  |
|                                                                                            | SB          | B                            | 18.5                  | A                           | 8.6                   | D                              | 47.4                  | B                            | 19.9                  |
| Traffic Signal - Black Rock Turnpike at Samp Mortar Drive                                  |             |                              |                       |                             |                       |                                |                       |                              |                       |
| Overall                                                                                    |             | B                            | 16.7                  | B                           | 13.1                  | B                              | 16.4                  | B                            | 14.5                  |
| Samp Mortar Drive                                                                          | EBL         | C                            | 33.9                  | D                           | 35.9                  | D                              | 38.8                  | D                            | 37.7                  |
|                                                                                            | EBR         | B                            | 11.3                  | B                           | 10.8                  | A                              | 9.1                   | A                            | 9.6                   |
|                                                                                            | NBL         | A                            | 9.4                   | A                           | 6.9                   | A                              | 9.7                   | A                            | 7.8                   |
| Black Rock Turnpike                                                                        | NBT         | B                            | 14.0                  | B                           | 14.5                  | B                              | 18.5                  | B                            | 16.7                  |
|                                                                                            | SB          | C                            | 22.3                  | B                           | 11.1                  | B                              | 14.1                  | B                            | 11.6                  |
| Traffic Signal - Black Rock Turnpike at Brookside Drive                                    |             |                              |                       |                             |                       |                                |                       |                              |                       |
| Overall                                                                                    |             | A                            | 2.9                   | A                           | 3.7                   | A                              | 8.0                   | A                            | 5.4                   |
| Brookside Drive                                                                            | EB          | C                            | 29.4                  | C                           | 24.7                  | C                              | 33.5                  | C                            | 28.7                  |
| Black Rock Turnpike                                                                        | NB          | A                            | 2.5                   | A                           | 2.9                   | A                              | 4.4                   | A                            | 3.6                   |
|                                                                                            | SB          | A                            | 0.6                   | A                           | 1.6                   | A                              | 5.4                   | A                            | 3.3                   |
| Traffic Signal - Black Rock Turnpike at Fairfield Woods Road & Commercial Driveway         |             |                              |                       |                             |                       |                                |                       |                              |                       |
| Overall                                                                                    |             | B                            | 15.7                  | A                           | 9.1                   | B                              | 11.0                  | A                            | 9.6                   |
| Commercial Driveway <sup>4</sup>                                                           | EBLT        | B                            | 19.8                  | C                           | 24.3                  | C                              | 29.7                  | C                            | 28.5                  |
|                                                                                            | EBR         | A                            | 0.0                   | A                           | 0.5                   | A                              | 1.0                   | A                            | 0.7                   |
| Fairfield Woods Road                                                                       | WBLT        | C                            | 21.6                  | C                           | 29.5                  | D                              | 36.5                  | D                            | 38.6                  |
|                                                                                            | WBR         | D                            | 53.7                  | D                           | 39.5                  | D                              | 38.5                  | D                            | 38.9                  |
| Black Rock Turnpike                                                                        | NB          | A                            | 8.8                   | A                           | 5.7                   | A                              | 5.1                   | A                            | 5.7                   |
|                                                                                            | SB          | A                            | 3.2                   | A                           | 4.1                   | A                              | 9.8                   | A                            | 4.3                   |
| Traffic Signal - Black Rock Turnpike at Stillson Road                                      |             |                              |                       |                             |                       |                                |                       |                              |                       |
| Overall                                                                                    |             | D                            | 44.5                  | D                           | 37.7                  | D                              | 53.9                  | D                            | 48.5                  |
| Black Rock Turnpike                                                                        | SBL         | E                            | 60.0                  | E                           | 61.1                  | E                              | 68.3                  | E                            | 69.5                  |
|                                                                                            | SBTR        | D                            | 37.5                  | D                           | 38.2                  | E                              | 56.2                  | D                            | 51.9                  |
|                                                                                            | NBL         | F                            | 99.0                  | E                           | 62.4                  | E                              | 75.1                  | E                            | 79.6                  |
|                                                                                            | NBTR        | D                            | 37.6                  | C                           | 31.2                  | D                              | 36.8                  | D                            | 41.3                  |
|                                                                                            | EBL         | C                            | 25.7                  | C                           | 23.9                  | C                              | 28.4                  | C                            | 27.9                  |
| Stillson Road                                                                              | EBTR        | C                            | 32.3                  | D                           | 46.1                  | F                              | 86.1                  | E                            | 60.5                  |
|                                                                                            | WBL         | B                            | 18.9                  | C                           | 24.5                  | D                              | 38.8                  | C                            | 29.8                  |
|                                                                                            | WBTR        | E                            | 61.4                  | D                           | 43.1                  | D                              | 53.7                  | D                            | 53.8                  |
| Traffic Signal - Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza Driveways |             |                              |                       |                             |                       |                                |                       |                              |                       |
| Overall                                                                                    |             | A                            | 6.6                   | B                           | 10.4                  | B                              | 12.8                  | B                            | 14.3                  |
| Black Rock Turnpike                                                                        | SB          | A                            | 3.0                   | A                           | 7.7                   | B                              | 11.3                  | B                            | 13.2                  |
|                                                                                            | NB          | A                            | 6.1                   | A                           | 7.9                   | B                              | 11.6                  | B                            | 13.7                  |
| Turnpike Shopping Center<br>Driveway                                                       | EBLT        | D                            | 38.5                  | C                           | 34.1                  | C                              | 30.2                  | C                            | 27.8                  |
|                                                                                            | EBR         | A                            | 0.4                   | A                           | 0.9                   | A                              | 3.7                   | A                            | 3.9                   |
| Fairway Plaza Driveway                                                                     | WBL         | C                            | 32.5                  | C                           | 25.1                  | C                              | 22.2                  | C                            | 23.2                  |
|                                                                                            | WBTR        | A                            | 0.2                   | A                           | 0.3                   | A                              | 0.2                   | A                            | 0.3                   |
| Traffic Signal - Black Rock Turnpike at Katona Drive & Katona Drive Extension              |             |                              |                       |                             |                       |                                |                       |                              |                       |
| Overall                                                                                    |             | A                            | 6.7                   | A                           | 7.2                   | A                              | 7.5                   | A                            | 7.8                   |
| Black Rock Turnpike                                                                        | SB          | A                            | 2.3                   | A                           | 3.0                   | A                              | 3.4                   | A                            | 3.5                   |
|                                                                                            | NB          | A                            | 6.6                   | A                           | 6.6                   | A                              | 7.0                   | A                            | 8.1                   |
| Katona Drive                                                                               | EBLT        | D                            | 42.9                  | D                           | 45.7                  | D                              | 48.2                  | D                            | 47.0                  |
|                                                                                            | EBR         | A                            | 0.9                   | A                           | 2.5                   | A                              | 4.7                   | A                            | 1.3                   |
| Katona Drive Extension                                                                     | WBL         | C                            | 27.0                  | C                           | 25.7                  | C                              | 25.0                  | C                            | 25.0                  |
|                                                                                            | WBTR        | C                            | 24.7                  | B                           | 19.4                  | B                              | 16.3                  | B                            | 15.1                  |
| Traffic Signal - Black Rock Turnpike at Burroughs Road                                     |             |                              |                       |                             |                       |                                |                       |                              |                       |
| Overall                                                                                    |             | B                            | 14.8                  | B                           | 10.3                  | B                              | 10.8                  | B                            | 10.4                  |
| Black Rock Turnpike                                                                        | SB          | A                            | 5.7                   | A                           | 5.0                   | A                              | 5.2                   | A                            | 5.5                   |
|                                                                                            | NB          | B                            | 11.6                  | A                           | 7.3                   | A                              | 7.6                   | A                            | 7.9                   |
| Burroughs Road                                                                             | EB          | C                            | 20.5                  | C                           | 22.2                  | C                              | 26.2                  | C                            | 23.2                  |
|                                                                                            | WB          | D                            | 37.7                  | C                           | 34.8                  | D                              | 38.5                  | C                            | 34.3                  |
| Traffic Signal - Black Rock Turnpike at Tunxis Hill Cutoff, Moritz Place & Whitewood Drive |             |                              |                       |                             |                       |                                |                       |                              |                       |
| Overall                                                                                    |             | B                            | 13.2                  | B                           | 11.8                  | B                              | 14.5                  | B                            | 13.9                  |
| Black Rock Turnpike                                                                        | SBLT        | B                            | 15.3                  | B                           | 17.7                  | C                              | 21.9                  | B                            | 18.8                  |
|                                                                                            | SBR         | A                            | 3.2                   | A                           | 3.5                   | A                              | 3.1                   | A                            | 3.5                   |
| Tunxis Hill Cutoff                                                                         | NB          | B                            | 16.8                  | B                           | 13.9                  | B                              | 14.1                  | B                            | 16.7                  |
| Black Rock Turnpike                                                                        | NWB         | B                            | 15.3                  | B                           | 13.8                  | B                              | 18.4                  | B                            | 16.9                  |
| Moritz Place                                                                               | NEB         | C                            | 25.5                  | C                           | 24.3                  | C                              | 29.8                  | C                            | 28.1                  |
| Whitewood Drive                                                                            | SWB         | C                            | 26.0                  | C                           | 24.5                  | C                              | 29.7                  | C                            | 28.4                  |

**TABLE 1 (CONTINUED)**

2017 Existing Conditions - Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh)

|                                                            | Lane Use | Weekday Morning Peak Hour |                    | Weekday Midday Peak Hour |                    | Weekday Afternoon Peak Hour |                    | Saturday Midday Peak Hour |                    |
|------------------------------------------------------------|----------|---------------------------|--------------------|--------------------------|--------------------|-----------------------------|--------------------|---------------------------|--------------------|
|                                                            |          | LOS                       | Avg. Delay (s/veh) | LOS                      | Avg. Delay (s/veh) | LOS                         | Avg. Delay (s/veh) | LOS                       | Avg. Delay (s/veh) |
| Unsignalized TWSC - Tunxis Hill Cutoff at Tunxis Hill Road |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Tunxis Hill Road                                           | EBL      | A                         | 0.0                | C                        | 20.7               | A                           | 0.0                | C                         | 24.5               |
|                                                            | EBR      | A                         | 9.6                | B                        | 10.3               | B                           | 11.1               | B                         | 10.4               |
| Tunxis Hill Cutoff                                         | NBL      | A                         | 8.1                | A                        | 8.5                | A                           | 9.0                | A                         | 8.6                |
| Unsignalized TWSC - Black Rock Turnpike at Judd Street     |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Black Rock Turnpike                                        | NBL      | A                         | 8.5                | A                        | 8.8                | A                           | 8.8                | A                         | 9.0                |
| Judd Street                                                | EB       | B                         | 13.8               | C                        | 15.2               | C                           | 18.6               | C                         | 17.6               |



TABLE 2

2017 Existing Conditions - Intersection Operation Summary - Vehicular 50<sup>th</sup> / 95<sup>th</sup> Percentile Queue (In Feet)

|                                                                                            | Lane Use | Available Storage | Weekday Morning Peak Hour |               | Weekday Midday Peak Hour |               | Weekday Afternoon Peak Hour |               | Saturday Midday Peak Hour |               |
|--------------------------------------------------------------------------------------------|----------|-------------------|---------------------------|---------------|--------------------------|---------------|-----------------------------|---------------|---------------------------|---------------|
|                                                                                            |          |                   | Avg. Queues               | Design Queues | Avg. Queues              | Design Queues | Avg. Queues                 | Design Queues | Avg. Queues               | Design Queues |
| Traffic Signal - Black Rock Turnpike at Old Black Rock Turnpike & Tahmore Drive            |          |                   |                           |               |                          |               |                             |               |                           |               |
| Old Black Rock Turnpike                                                                    | EB       | 1000              | 3                         | 17            | 0                        | 0             | 0                           | 0             | 3                         | 14            |
| Tahmore Drive                                                                              | WB       | 615               | 97                        | 314           | 10                       | 50            | 20                          | 62            | 43                        | 86            |
| Black Rock Turnpike                                                                        | NB       | 1000              | 136                       | 219           | 90                       | 190           | 143                         | 331           | 160                       | 337           |
|                                                                                            | SB       | 1000              | 156                       | 263           | 113                      | 249           | 518                         | 769           | 218                       | 581           |
| Traffic Signal - Black Rock Turnpike at Samp Mortar Drive                                  |          |                   |                           |               |                          |               |                             |               |                           |               |
| Samp Mortar Drive                                                                          | EBL      | 1000              | 26                        | 55            | 41                       | 72            | 82                          | 134           | 61                        | 96            |
|                                                                                            | EBR      | 1000              | 0                         | 39            | 0                        | 41            | 0                           | 64            | 0                         | 40            |
|                                                                                            | NBL      | 100               | 66                        | 153           | 30                       | 62            | 37                          | 68            | 24                        | 59            |
| Black Rock Turnpike                                                                        | NBT      | 750               | 313                       | 466           | 275                      | 405           | 323                         | 466           | 299                       | 464           |
|                                                                                            | SB       | 1000              | 147                       | 196           | 92                       | 159           | 151                         | 257           | 120                       | 207           |
| Traffic Signal - Black Rock Turnpike at Brookside Drive                                    |          |                   |                           |               |                          |               |                             |               |                           |               |
| Brookside Drive                                                                            | EB       | 900               | 33                        | 63            | 34                       | 75            | 92                          | 128           | 55                        | 95            |
| Black Rock Turnpike                                                                        | NB       | 170               | 30                        | 59            | 26                       | 56            | 62                          | 80            | 29                        | 79            |
|                                                                                            | SB       | 750               | 8                         | 7             | 8                        | 8             | 215                         | 27            | 11                        | 12            |
| Traffic Signal - Black Rock Turnpike at Fairfield Woods Road & Commercial Driveway         |          |                   |                           |               |                          |               |                             |               |                           |               |
| Commercial Driveway                                                                        | EBLT     | 35                | 2                         | 9             | 9                        | 22            | 23                          | 45            | 24                        | 51            |
|                                                                                            | EBR      | 35                | 0                         | 0             | 0                        | 0             | 0                           | 0             | 0                         | 0             |
| Fairfield Woods Road                                                                       | WBLT     | 1000              | 18                        | 44            | 34                       | 58            | 43                          | 72            | 57                        | 88            |
|                                                                                            | WBR      | 1000              | 156                       | 299           | 77                       | 111           | 58                          | 89            | 68                        | 101           |
| Black Rock Turnpike                                                                        | NB       | 1000              | 106                       | 141           | 63                       | 117           | 61                          | 116           | 72                        | 136           |
|                                                                                            | SB       | 170               | 21                        | 22            | 14                       | 189           | 96                          | 390           | 18                        | 258           |
| Traffic Signal - Black Rock Turnpike at Stillson Road                                      |          |                   |                           |               |                          |               |                             |               |                           |               |
| Black Rock Turnpike                                                                        | SBL      | 200               | 35                        | 75            | 55                       | 110           | 67                          | 120           | 67                        | 120           |
|                                                                                            | SBTR     | 1000              | 167                       | 228           | 251                      | 346           | 368                         | 508           | 336                       | 454           |
|                                                                                            | NBL      | 175               | 138                       | 287           | 86                       | 175           | 108                         | 213           | 111                       | 218           |
|                                                                                            | NBTR     | 680               | 270                       | 354           | 210                      | 305           | 249                         | 330           | 300                       | 391           |
| Stillson Road                                                                              | EBL      | 210               | 72                        | 108           | 88                       | 146           | 115                         | 173           | 114                       | 174           |
|                                                                                            | EBTR     | 1000              | 144                       | 208           | 198                      | 323           | 352                         | 608           | 267                       | 440           |
|                                                                                            | WBL      | 170               | 48                        | 78            | 75                       | 125           | 93                          | 157           | 121                       | 178           |
|                                                                                            | WBTR     | 1000              | 314                       | 472           | 150                      | 250           | 240                         | 335           | 258                       | 381           |
| Traffic Signal - Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza Driveways |          |                   |                           |               |                          |               |                             |               |                           |               |
| Black Rock Turnpike                                                                        | SB       | 680               | 31                        | 50            | 81                       | 125           | 119                         | 171           | 114                       | 166           |
|                                                                                            | NB       | 405               | 62                        | 125           | 54                       | 70            | 65                          | 83            | 65                        | 82            |
| Turnpike Shopping Center Driveway                                                          | EBLT     | 25                | 29                        | 56            | 72                       | 128           | 84                          | 135           | 78                        | 139           |
|                                                                                            | EBR      | 25                | 0                         | 0             | 0                        | 3             | 0                           | 21            | 0                         | 30            |
| Fairway Plaza Driveway                                                                     | WBLT     | 25                | 14                        | 36            | 27                       | 57            | 21                          | 46            | 42                        | 72            |
|                                                                                            | WBR      | 25                | 0                         | 0             | 0                        | 0             | 0                           | 0             | 0                         | 0             |
| Traffic Signal - Black Rock Turnpike at Katona Drive & Katona Drive Extension              |          |                   |                           |               |                          |               |                             |               |                           |               |
| Black Rock Turnpike                                                                        | SB       | 405               | 8                         | 30            | 44                       | 58            | 54                          | 77            | 60                        | 90            |
|                                                                                            | NB       | 300               | 53                        | 61            | 40                       | 51            | 43                          | 53            | 49                        | 61            |
|                                                                                            | EBLT     | 1000              | 36                        | 73            | 48                       | 84            | 56                          | 93            | 54                        | 100           |
| Katona Drive                                                                               | EBR      | 250               | 0                         | 0             | 0                        | 3             | 0                           | 13            | 0                         | 3             |
|                                                                                            | WBL      | 135               | 1                         | 7             | 2                        | 8             | 0                           | 4             | 1                         | 8             |
| Katona Drive Extension                                                                     | WBTR     | 135               | 1                         | 8             | 5                        | 18            | 2                           | 14            | 0                         | 13            |
| Traffic Signal - Black Rock Turnpike at Burroughs Road                                     |          |                   |                           |               |                          |               |                             |               |                           |               |
| Black Rock Turnpike                                                                        | SB       | 275               | 26                        | 32            | 40                       | 53            | 41                          | 64            | 38                        | 72            |
|                                                                                            | NB       | 835               | 139                       | 232           | 72                       | 135           | 90                          | 167           | 98                        | 178           |
|                                                                                            | EB       | 1000              | 41                        | 63            | 34                       | 56            | 56                          | 93            | 36                        | 66            |
| Burroughs Road                                                                             | WB       | 1000              | 141                       | 178           | 97                       | 136           | 95                          | 152           | 96                        | 151           |
| Traffic Signal - Black Rock Turnpike at Tunxis Hill Cutoff, Moritz Place & Whitewood Drive |          |                   |                           |               |                          |               |                             |               |                           |               |
| Black Rock Turnpike                                                                        | SBLT     | 835               | 41                        | 130           | 56                       | 199           | 95                          | 341           | 74                        | 253           |
|                                                                                            | SBR      | 835               | 0                         | 78            | 0                        | 109           | 0                           | 120           | 0                         | 134           |
| Tunxis Hill Cutoff                                                                         | NB       | 1000              | 60                        | 161           | 30                       | 99            | 36                          | 114           | 49                        | 155           |
| Black Rock Turnpike                                                                        | NWB      | 1000              | 26                        | 82            | 24                       | 86            | 43                          | 130           | 37                        | 121           |
| Moritz Place                                                                               | NEB      | 935               | 1                         | 8             | 2                        | 16            | 3                           | 20            | 4                         | 22            |
| Whitewood Drive                                                                            | SWB      | 785               | 5                         | 30            | 3                        | 18            | 2                           | 13            | 5                         | 27            |

**TABLE 2 (CONTINUED)**2017 Existing Conditions - Intersection Operation Summary - Vehicular 95<sup>th</sup> Percentile Queue (In Feet)

|                                                                   |                      |      | Weekday Morning<br>Peak Hour<br>Design<br>Queues | Weekday Midday<br>Peak Hour<br>Design<br>Queues | Weekday<br>Afternoon<br>Design<br>Queues | Saturday Midday<br>Peak Hour<br>Design<br>Queues |
|-------------------------------------------------------------------|----------------------|------|--------------------------------------------------|-------------------------------------------------|------------------------------------------|--------------------------------------------------|
| Lane<br>Use                                                       | Available<br>Storage |      |                                                  |                                                 |                                          |                                                  |
| <b>Unsignalized TWSC - Tunxis Hill Cutoff at Tunxis Hill Road</b> |                      |      |                                                  |                                                 |                                          |                                                  |
| Tunxis Hill Road                                                  | EBL                  | 1000 | 0                                                | 0                                               | 0                                        | 3                                                |
|                                                                   | EBR                  | 1000 | 8                                                | 8                                               | 13                                       | 8                                                |
| Tunxis Hill Cutoff                                                | NBL                  | 200  | 5                                                | 3                                               | 5                                        | 3                                                |
| <b>Unsignalized TWSC - Black Rock Turnpike at Judd Street</b>     |                      |      |                                                  |                                                 |                                          |                                                  |
| Black Rock Turnpike                                               | NBL                  | 25   | 5                                                | 5                                               | 5                                        | 5                                                |
| Judd Street                                                       | EB                   | 1000 | 18                                               | 20                                              | 40                                       | 30                                               |



TABLE 3

2040 Background Conditions - Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh)

|                                                                                            | Lane Use | Weekday Morning Peak Hour |                    | Weekday Midday Peak Hour |                    | Weekday Afternoon Peak Hour |                    | Saturday Midday Peak Hour |                    |
|--------------------------------------------------------------------------------------------|----------|---------------------------|--------------------|--------------------------|--------------------|-----------------------------|--------------------|---------------------------|--------------------|
|                                                                                            |          | LOS                       | Avg. Delay (s/veh) | LOS                      | Avg. Delay (s/veh) | LOS                         | Avg. Delay (s/veh) | LOS                       | Avg. Delay (s/veh) |
| Traffic Signal - Black Rock Turnpike at Old Black Rock Turnpike & Tahmore Drive            |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                                    |          | C                         | 26.6               | A                        | 8.7                | D                           | 43.6               | B                         | 18.9               |
| Old Black Rock Turnpike                                                                    | EB       | B                         | 17.9               | A                        | 0.1                | A                           | 2.2                | B                         | 19.9               |
| Tahmore Drive                                                                              | WB       | E                         | 61.1               | B                        | 15.5               | C                           | 20.1               | C                         | 24.7               |
| Black Rock Turnpike                                                                        | NB       | B                         | 13.4               | A                        | 7.1                | A                           | 9.1                | B                         | 11.7               |
|                                                                                            | SB       | B                         | 19.9               | A                        | 9.4                | E                           | 73.4               | C                         | 24.3               |
| Traffic Signal - Black Rock Turnpike at Samp Mortar Drive                                  |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                                    |          | B                         | 18.3               | B                        | 13.7               | B                           | 17.9               | B                         | 15.2               |
| Samp Mortar Drive                                                                          | EBL      | C                         | 34.2               | D                        | 36.2               | D                           | 38.3               | D                         | 38.0               |
|                                                                                            | EBR      | B                         | 11.3               | B                        | 10.8               | B                           | 10.1               | A                         | 9.5                |
|                                                                                            | NBL      | B                         | 10.5               | A                        | 7.3                | B                           | 10.6               | A                         | 8.3                |
| Black Rock Turnpike                                                                        | NBT      | B                         | 14.7               | B                        | 15.2               | C                           | 20.7               | B                         | 17.7               |
|                                                                                            | SB       | C                         | 25.3               | B                        | 11.9               | B                           | 15.5               | B                         | 12.4               |
| Traffic Signal - Black Rock Turnpike at Brookside Drive                                    |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                                    |          | A                         | 3.0                | A                        | 3.8                | A                           | 8.2                | A                         | 5.6                |
| Brookside Drive                                                                            | EB       | C                         | 29.4               | C                        | 25.4               | C                           | 34.0               | C                         | 29.3               |
| Black Rock Turnpike                                                                        | NB       | A                         | 2.6                | A                        | 3.0                | A                           | 4.6                | A                         | 3.8                |
|                                                                                            | SB       | A                         | 0.6                | A                        | 1.4                | A                           | 5.5                | A                         | 3.4                |
| Traffic Signal - Black Rock Turnpike at Fairfield Woods Road & Commercial Driveway         |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                                    |          | B                         | 16.7               | A                        | 9.5                | B                           | 13.1               | B                         | 10.3               |
| Commercial Driveway4                                                                       | EBLT     | B                         | 19.8               | C                        | 23.9               | C                           | 29.5               | C                         | 28.3               |
|                                                                                            | EBR      | A                         | 0.0                | A                        | 0.5                | A                           | 1.0                | A                         | 0.7                |
| Fairfield Woods Road                                                                       | WBLT     | C                         | 21.6               | C                        | 29.3               | D                           | 36.7               | D                         | 39.0               |
|                                                                                            | WBR      | E                         | 58.2               | D                        | 39.7               | D                           | 38.8               | D                         | 39.1               |
| Black Rock Turnpike                                                                        | NB       | A                         | 9.3                | A                        | 6.1                | A                           | 5.6                | A                         | 6.2                |
|                                                                                            | SB       | A                         | 3.2                | A                        | 4.6                | B                           | 13.6               | A                         | 5.3                |
| Traffic Signal - Black Rock Turnpike at Stillson Road                                      |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                                    |          | D                         | 49.7               | D                        | 40.4               | E                           | 61.5               | D                         | 53.8               |
| Black Rock Turnpike                                                                        | SBL      | E                         | 61.3               | E                        | 65.5               | E                           | 69.6               | E                         | 69.6               |
|                                                                                            | SBTR     | D                         | 38.6               | D                        | 41.3               | E                           | 72.6               | E                         | 59.1               |
|                                                                                            | NBL      | F                         | 117.4              | E                        | 68.9               | F                           | 83.4               | F                         | 85.8               |
|                                                                                            | NBTR     | D                         | 39.8               | C                        | 34.9               | D                           | 39.7               | D                         | 44.3               |
|                                                                                            | EBL      | C                         | 31.9               | C                        | 24.8               | C                           | 29.8               | C                         | 31.0               |
| Stillson Road                                                                              | EBTR     | C                         | 33.5               | D                        | 48.3               | F                           | 94.7               | E                         | 68.0               |
|                                                                                            | WBL      | B                         | 19.3               | C                        | 25.5               | D                           | 41.4               | D                         | 36.0               |
|                                                                                            | WBTR     | E                         | 75.1               | D                        | 43.2               | D                           | 54.4               | E                         | 58.7               |
| Traffic Signal - Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza Driveways |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                                    |          | A                         | 7.1                | B                        | 11.1               | B                           | 15.8               | C                         | 23.5               |
| Black Rock Turnpike                                                                        | SB       | A                         | 3.2                | A                        | 8.9                | B                           | 14.1               | C                         | 20.8               |
|                                                                                            | NB       | A                         | 6.8                | A                        | 8.7                | B                           | 16.6               | C                         | 30.3               |
| Turnpike Shopping Center Driveway                                                          | EBLT     | D                         | 38.9               | C                        | 32.3               | C                           | 28.8               | C                         | 24.5               |
|                                                                                            | EBR      | A                         | 0.5                | A                        | 1.2                | A                           | 4.0                | A                         | 3.9                |
| Fairway Plaza Driveway                                                                     | WBL      | C                         | 32.4               | C                        | 24.2               | C                           | 21.4               | C                         | 20.7               |
|                                                                                            | WBTR     | A                         | 0.2                | A                        | 0.3                | A                           | 0.2                | A                         | 0.2                |
| Traffic Signal - Black Rock Turnpike at Katona Drive & Katona Drive Extension              |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                                    |          | A                         | 6.9                | A                        | 7.4                | A                           | 7.8                | A                         | 8.5                |
| Black Rock Turnpike                                                                        | SB       | A                         | 2.3                | A                        | 3.1                | A                           | 3.6                | A                         | 4.3                |
|                                                                                            | NB       | A                         | 6.8                | A                        | 6.8                | A                           | 7.1                | A                         | 8.5                |
| Katona Drive                                                                               | EBLT     | D                         | 43.3               | D                        | 46.8               | D                           | 49.6               | D                         | 48.2               |
|                                                                                            | EBR      | A                         | 0.9                | A                        | 3.0                | A                           | 5.3                | A                         | 1.8                |
| Katona Drive Extension                                                                     | WBL      | C                         | 26.5               | C                        | 25.3               | C                           | 25.0               | C                         | 25.0               |
|                                                                                            | WBTR     | C                         | 24.3               | B                        | 19.5               | B                           | 15.6               | B                         | 14.9               |
| Traffic Signal - Black Rock Turnpike at Burroughs Road                                     |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                                    |          | B                         | 15.7               | B                        | 10.8               | B                           | 11.8               | B                         | 11.4               |
| Black Rock Turnpike                                                                        | SB       | A                         | 6.2                | A                        | 5.4                | A                           | 6.6                | A                         | 7.1                |
|                                                                                            | NB       | B                         | 12.6               | A                        | 7.9                | A                           | 8.3                | A                         | 8.6                |
|                                                                                            | EB       | C                         | 20.4               | C                        | 22.3               | C                           | 25.7               | C                         | 23.0               |
|                                                                                            | WB       | D                         | 39.1               | D                        | 35.5               | D                           | 39.5               | D                         | 35.1               |
| Traffic Signal - Black Rock Turnpike at Tunxis Hill Cutoff, Moritz Place & Whitewood Drive |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                                    |          | B                         | 13.8               | B                        | 12.2               | B                           | 15.2               | B                         | 16.2               |
| Black Rock Turnpike                                                                        | SBLT     | B                         | 15.7               | B                        | 18.1               | C                           | 23.0               | C                         | 21.6               |
|                                                                                            | SBR      | A                         | 3.1                | A                        | 3.5                | A                           | 3.2                | A                         | 4.6                |
| Tunxis Hill Cutoff                                                                         | NB       | B                         | 17.4               | B                        | 14.2               | B                           | 14.7               | B                         | 19.7               |
| Black Rock Turnpike                                                                        | NWB      | B                         | 16.2               | B                        | 14.7               | B                           | 19.6               | B                         | 19.6               |
| Moritz Place                                                                               | NEB      | C                         | 27.5               | C                        | 25.4               | C                           | 30.8               | C                         | 31.4               |
| Whitewood Drive                                                                            | SWB      | C                         | 27.6               | C                        | 25.6               | C                           | 30.5               | C                         | 31.5               |

**TABLE 3 (CONTINUED)**

2040 Background Conditions - Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh)

|                                                            | Lane Use | Weekday Morning Peak Hour |                    | Weekday Midday Peak Hour |                    | Weekday Afternoon Peak Hour |                    | Saturday Midday Peak Hour |                    |
|------------------------------------------------------------|----------|---------------------------|--------------------|--------------------------|--------------------|-----------------------------|--------------------|---------------------------|--------------------|
|                                                            |          | LOS                       | Avg. Delay (s/veh) | LOS                      | Avg. Delay (s/veh) | LOS                         | Avg. Delay (s/veh) | LOS                       | Avg. Delay (s/veh) |
| Unsignalized TWSC - Tunxis Hill Cutoff at Tunxis Hill Road |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Tunxis Hill Road                                           | EBL      | A                         | 0.0                | C                        | 22.3               | A                           | 0.0                | D                         | 26.9               |
|                                                            | EBR      | A                         | 9.7                | B                        | 10.4               | B                           | 11.4               | B                         | 10.6               |
| Tunxis Hill Cutoff                                         | NBL      | A                         | 8.2                | A                        | 8.7                | A                           | 9.2                | A                         | 8.8                |
| Unsignalized TWSC - Black Rock Turnpike at Judd Street     |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Black Rock Turnpike                                        | NBL      | A                         | 8.6                | A                        | 8.9                | A                           | 9.0                | A                         | 9.2                |
|                                                            | EB       | B                         | 14.4               | C                        | 16.0               | C                           | 20.6               | C                         | 19.1               |



TABLE 4

2040 Background Conditions - Intersection Operation Summary - Vehicular 50<sup>th</sup> / 95<sup>th</sup> Percentile Queue (In Feet)

|                                                                                                       |                      | Weekday Morning<br>Peak Hour |                  | Weekday Midday<br>Peak Hour |                  | Weekday Afternoon<br>Peak Hour |                  | Saturday Midday<br>Peak Hour |                  |
|-------------------------------------------------------------------------------------------------------|----------------------|------------------------------|------------------|-----------------------------|------------------|--------------------------------|------------------|------------------------------|------------------|
| Lane<br>Use                                                                                           | Available<br>Storage | Avg.<br>Queues               | Design<br>Queues | Avg.<br>Queues              | Design<br>Queues | Avg.<br>Queues                 | Design<br>Queues | Avg.<br>Queues               | Design<br>Queues |
| <b>Traffic Signal - Black Rock Turnpike at Old Black Rock Turnpike &amp; Tahmore Drive</b>            |                      |                              |                  |                             |                  |                                |                  |                              |                  |
| Old Black Rock Turnpike                                                                               | EB                   | 1000                         | 4                | 18                          | 0                | 0                              | 0                | 3                            | 14               |
| Tahmore Drive                                                                                         | WB                   | 615                          | 119              | 337                         | 12               | 53                             | 22               | 48                           | 92               |
| Black Rock Turnpike                                                                                   | NB                   | 1000                         | 149              | 241                         | 99               | 215                            | 161              | 186                          | 384              |
|                                                                                                       | SB                   | 1000                         | 174              | 299                         | 126              | 289                            | 579              | 266                          | 643              |
| <b>Traffic Signal - Black Rock Turnpike at Samp Mortar Drive</b>                                      |                      |                              |                  |                             |                  |                                |                  |                              |                  |
| Samp Mortar Drive                                                                                     | EBL                  | 1000                         | 28               | 57                          | 43               | 75                             | 87               | 64                           | 100              |
|                                                                                                       | EBR                  | 1000                         | 0                | 40                          | 0                | 41                             | 7                | 75                           | 0                |
|                                                                                                       | NBL                  | 100                          | 71               | 171                         | 31               | 66                             | 40               | 72                           | 27               |
| Black Rock Turnpike                                                                                   | NBT                  | 750                          | 339              | 503                         | 300              | 439                            | 356              | 575                          | 332              |
|                                                                                                       | SB                   | 1000                         | 165              | 218                         | 101              | 175                            | 169              | 293                          | 133              |
| <b>Traffic Signal - Black Rock Turnpike at Brookside Drive</b>                                        |                      |                              |                  |                             |                  |                                |                  |                              |                  |
| Brookside Drive                                                                                       | EB                   | 900                          | 34               | 65                          | 38               | 80                             | 99               | 135                          | 59               |
| Black Rock Turnpike                                                                                   | NB                   | 170                          | 34               | 66                          | 39               | 63                             | 66               | 84                           | 53               |
|                                                                                                       | SB                   | 750                          | 8                | 7                           | 9                | 10                             | 237              | 31                           | 12               |
| <b>Traffic Signal - Black Rock Turnpike at Fairfield Woods Road &amp; Commercial Driveway</b>         |                      |                              |                  |                             |                  |                                |                  |                              |                  |
| Commercial Driveway                                                                                   | EBLT                 | 35                           | 2                | 9                           | 9                | 22                             | 25               | 47                           | 53               |
|                                                                                                       | EBR                  | 35                           | 0                | 0                           | 0                | 0                              | 0                | 0                            | 0                |
| Fairfield Woods Road                                                                                  | WBLT                 | 1000                         | 19               | 47                          | 35               | 60                             | 46               | 75                           | 60               |
|                                                                                                       | WBR                  | 1000                         | 168              | 324                         | 82               | 115                            | 61               | 93                           | 72               |
| Black Rock Turnpike                                                                                   | NB                   | 1000                         | 115              | 152                         | 71               | 131                            | 69               | 132                          | 81               |
|                                                                                                       | SB                   | 170                          | 22               | 23                          | 15               | 211                            | 126              | 443                          | 20               |
| <b>Traffic Signal - Black Rock Turnpike at Stillson Road</b>                                          |                      |                              |                  |                             |                  |                                |                  |                              |                  |
| Black Rock Turnpike                                                                                   | SBL                  | 200                          | 38               | 80                          | 61               | 117                            | 72               | 128                          | 72               |
|                                                                                                       | SBTR                 | 1000                         | 182              | 243                         | 279              | 383                            | 410              | 556                          | 365              |
|                                                                                                       | NBL                  | 175                          | 159              | 309                         | 95               | 195                            | 116              | 231                          | 118              |
|                                                                                                       | NBTR                 | 680                          | 297              | 382                         | 234              | 335                            | 272              | 353                          | 327              |
|                                                                                                       | EBL                  | 210                          | 77               | 128                         | 99               | 154                            | 123              | 184                          | 122              |
| Stillson Road                                                                                         | EBTR                 | 1000                         | 156              | 223                         | 222              | 382                            | 417              | 655                          | 289              |
|                                                                                                       | WBL                  | 170                          | 51               | 83                          | 83               | 132                            | 103              | 174                          | 130              |
|                                                                                                       | WBTR                 | 1000                         | 348              | 517                         | 166              | 264                            | 258              | 358                          | 277              |
| <b>Traffic Signal - Black Rock Turnpike at Turnpike Shopping Center &amp; Fairway Plaza Driveways</b> |                      |                              |                  |                             |                  |                                |                  |                              |                  |
| Black Rock Turnpike                                                                                   | SB                   | 680                          | 34               | 54                          | 92               | 138                            | 136              | 191                          | 136              |
|                                                                                                       | NB                   | 405                          | 66               | 139                         | 57               | 73                             | 70               | 98                           | 70               |
| Turnpike Shopping                                                                                     | EBLT                 | 25                           | 31               | 58                          | 76               | 135                            | 88               | 142                          | 79               |
| Center Driveway                                                                                       | EBR                  | 25                           | 0                | 0                           | 0                | 5                              | 0                | 24                           | 0                |
| Fairway Plaza Driveway                                                                                | WBLT                 | 25                           | 14               | 37                          | 28               | 59                             | 22               | 47                           | 42               |
|                                                                                                       | WBR                  | 25                           | 0                | 0                           | 0                | 0                              | 0                | 0                            | 0                |
| <b>Traffic Signal - Black Rock Turnpike at Katona Drive &amp; Katona Drive Extension</b>              |                      |                              |                  |                             |                  |                                |                  |                              |                  |
| Black Rock Turnpike                                                                                   | SB                   | 405                          | 8                | 32                          | 47               | 62                             | 57               | 82                           | 64               |
|                                                                                                       | NB                   | 300                          | 56               | 63                          | 43               | 53                             | 46               | 56                           | 52               |
| Katona Drive                                                                                          | EBLT                 | 1000                         | 38               | 76                          | 51               | 88                             | 59               | 98                           | 57               |
|                                                                                                       | EBR                  | 250                          | 0                | 0                           | 0                | 6                              | 0                | 16                           | 0                |
| Katona Drive Extension                                                                                | WBL                  | 135                          | 1                | 7                           | 2                | 8                              | 0                | 4                            | 1                |
|                                                                                                       | WBTR                 | 135                          | 1                | 8                           | 5                | 20                             | 2                | 15                           | 0                |
| <b>Traffic Signal - Black Rock Turnpike at Burroughs Road</b>                                         |                      |                              |                  |                             |                  |                                |                  |                              |                  |
| Black Rock Turnpike                                                                                   | SB                   | 275                          | 28               | 34                          | 43               | 57                             | 44               | 170                          | 48               |
|                                                                                                       | NB                   | 835                          | 157              | 253                         | 81               | 150                            | 102              | 187                          | 110              |
| Burroughs Road                                                                                        | EB                   | 1000                         | 43               | 66                          | 36               | 58                             | 58               | 96                           | 39               |
|                                                                                                       | WB                   | 1000                         | 149              | 191                         | 104              | 144                            | 101              | 159                          | 102              |
| <b>Traffic Signal - Black Rock Turnpike at Tunxis Hill Cutoff, Moritz Place &amp; Whitewood Drive</b> |                      |                              |                  |                             |                  |                                |                  |                              |                  |
| Black Rock Turnpike                                                                                   | SBLT                 | 835                          | 44               | 144                         | 61               | 216                            | 106              | 403                          | 139              |
|                                                                                                       | SBR                  | 835                          | 0                | 84                          | 0                | 118                            | 0                | 130                          | 73               |
| Tunxis Hill Cutoff                                                                                    | NB                   | 1000                         | 64               | 180                         | 32               | 107                            | 40               | 124                          | 92               |
| Black Rock Turnpike                                                                                   | NWB                  | 1000                         | 29               | 91                          | 27               | 95                             | 52               | 140                          | 66               |
| Moritz Place                                                                                          | NEB                  | 935                          | 1                | 8                           | 2                | 16                             | 4                | 20                           | 6                |
| Whitewood Drive                                                                                       | SWB                  | 785                          | 5                | 32                          | 3                | 19                             | 2                | 13                           | 8                |

TABLE 4 (CONTINUED)

2040 Background Conditions - Intersection Operation Summary - Vehicular 95<sup>th</sup> Percentile Queue (In Feet)

|                                                                   |                      |      | Weekday Morning<br>Peak Hour<br>Design<br>Queues | Weekday Midday<br>Peak Hour<br>Design<br>Queues | Weekday<br>Afternoon<br>Design<br>Queues | Saturday Midday<br>Peak Hour<br>Design<br>Queues |
|-------------------------------------------------------------------|----------------------|------|--------------------------------------------------|-------------------------------------------------|------------------------------------------|--------------------------------------------------|
| Lane<br>Use                                                       | Available<br>Storage |      |                                                  |                                                 |                                          |                                                  |
| <b>Unsignalized TWSC - Tunxis Hill Cutoff at Tunxis Hill Road</b> |                      |      |                                                  |                                                 |                                          |                                                  |
|                                                                   | EBL                  | 1000 | 0                                                | 0                                               | 0                                        | 3                                                |
|                                                                   | EBR                  | 1000 | 8                                                | 8                                               | 13                                       | 8                                                |
| Tunxis Hill Cutoff                                                | NBL                  | 200  | 5                                                | 3                                               | 5                                        | 3                                                |
| <b>Unsignalized TWSC - Black Rock Turnpike at Judd Street</b>     |                      |      |                                                  |                                                 |                                          |                                                  |
| Black Rock Turnpike                                               | NBL                  | 25   | 5                                                | 5                                               | 5                                        | 5                                                |
| Judd Street                                                       | EB                   | 1000 | 23                                               | 23                                              | 48                                       | 35                                               |

TABLE 5

2040 Background-Optimized Conditions - Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh)

|                                                                                            |             | Weekday Morning<br>Peak Hour |                       | Weekday Midday<br>Peak Hour |                       | Weekday Afternoon<br>Peak Hour |                       | Saturday Midday<br>Peak Hour |                       |
|--------------------------------------------------------------------------------------------|-------------|------------------------------|-----------------------|-----------------------------|-----------------------|--------------------------------|-----------------------|------------------------------|-----------------------|
|                                                                                            | Lane<br>Use | LOS                          | Avg. Delay<br>(s/veh) | LOS                         | Avg. Delay<br>(s/veh) | LOS                            | Avg. Delay<br>(s/veh) | LOS                          | Avg. Delay<br>(s/veh) |
| Traffic Signal - Black Rock Turnpike at Old Black Rock Turnpike & Tahmore Drive            |             |                              |                       |                             |                       |                                |                       |                              |                       |
| Overall                                                                                    |             | C                            | 21.2                  | A                           | 6.1                   | C                              | 29.6                  | B                            | 15.2                  |
| Old Black Rock Turnpike                                                                    | EB          | B                            | 15.9                  | A                           | 0.4                   | A                              | 4.1                   | C                            | 29.8                  |
| Tahmore Drive                                                                              | WB          | D                            | 46.7                  | C                           | 26.8                  | D                              | 35.1                  | D                            | 50.4                  |
| Black Rock Turnpike                                                                        | NB          | A                            | 7.0                   | A                           | 2.8                   | A                              | 2.7                   | A                            | 6.3                   |
|                                                                                            | SB          | C                            | 20.6                  | A                           | 6.5                   | D                              | 50.5                  | B                            | 15.1                  |
| Traffic Signal - Black Rock Turnpike at Samp Mortar Drive                                  |             |                              |                       |                             |                       |                                |                       |                              |                       |
| Overall                                                                                    |             | B                            | 13.1                  | A                           | 8.5                   | B                              | 14.7                  | B                            | 10.2                  |
| Samp Mortar Drive                                                                          | EBL         | C                            | 31.1                  | D                           | 39.6                  | C                              | 32.4                  | D                            | 44.5                  |
|                                                                                            | EBR         | B                            | 10.5                  | B                           | 11.4                  | B                              | 12.3                  | B                            | 12.8                  |
|                                                                                            | NBL         | A                            | 8.3                   | A                           | 4.4                   | B                              | 12.3                  | A                            | 4.8                   |
| Black Rock Turnpike                                                                        | NBT         | A                            | 8.5                   | A                           | 5.5                   | B                              | 15.1                  | A                            | 6.4                   |
|                                                                                            | SB          | B                            | 18.7                  | A                           | 7.7                   | B                              | 12.4                  | A                            | 8.5                   |
| Traffic Signal - Black Rock Turnpike at Brookside Drive                                    |             |                              |                       |                             |                       |                                |                       |                              |                       |
| Overall                                                                                    |             | A                            | 3.3                   | A                           | 4.9                   | A                              | 8.0                   | A                            | 6.0                   |
| Brookside Drive                                                                            | EB          | C                            | 27.8                  | C                           | 29.4                  | D                              | 38.4                  | D                            | 40.0                  |
| Black Rock Turnpike                                                                        | NB          | A                            | 3.0                   | A                           | 3.5                   | A                              | 4.4                   | A                            | 3.7                   |
|                                                                                            | SB          | A                            | 1.0                   | A                           | 2.8                   | A                              | 4.4                   | A                            | 2.6                   |
| Traffic Signal - Black Rock Turnpike at Fairfield Woods Road & Commercial Driveway         |             |                              |                       |                             |                       |                                |                       |                              |                       |
| Overall                                                                                    |             | B                            | 14.6                  | B                           | 10.0                  | B                              | 13.0                  | B                            | 11.1                  |
| Commercial Driveway4                                                                       | EBLT        | B                            | 16.2                  | C                           | 25.9                  | D                              | 36.6                  | D                            | 35.8                  |
|                                                                                            | EBR         | A                            | 0.0                   | A                           | 0.6                   | A                              | 1.4                   | A                            | 0.9                   |
| Fairfield Woods Road                                                                       | WBLT        | B                            | 18.0                  | C                           | 31.8                  | D                              | 52.6                  | D                            | 50.1                  |
|                                                                                            | WBR         | D                            | 43.4                  | D                           | 43.3                  | E                              | 59.3                  | D                            | 50.6                  |
| Black Rock Turnpike                                                                        | NB          | B                            | 10.5                  | A                           | 5.9                   | A                              | 3.9                   | A                            | 5.6                   |
|                                                                                            | SB          | A                            | 3.8                   | A                           | 4.9                   | B                              | 10.5                  | A                            | 4.2                   |
| Traffic Signal - Black Rock Turnpike at Stillson Road                                      |             |                              |                       |                             |                       |                                |                       |                              |                       |
| Overall                                                                                    |             | D                            | 44.0                  | D                           | 39.3                  | E                              | 55.5                  | D                            | 49.7                  |
| Black Rock Turnpike                                                                        | SBL         | F                            | 89.4                  | E                           | 62.7                  | E                              | 74.1                  | F                            | 83.5                  |
|                                                                                            | SBTR        | D                            | 50.2                  | D                           | 41.2                  | D                              | 50.3                  | D                            | 47.3                  |
|                                                                                            | NBL         | E                            | 68.8                  | E                           | 66.1                  | F                              | 117.2                 | F                            | 98.6                  |
|                                                                                            | NBTR        | D                            | 41.2                  | C                           | 33.8                  | C                              | 34.8                  | D                            | 37.0                  |
| Stillson Road                                                                              | EBL         | C                            | 27.0                  | C                           | 24.5                  | C                              | 34.0                  | D                            | 39.1                  |
|                                                                                            | EBTR        | C                            | 30.1                  | D                           | 45.6                  | F                              | 84.5                  | E                            | 66.8                  |
|                                                                                            | WBL         | B                            | 17.5                  | C                           | 25.3                  | E                              | 63.7                  | D                            | 43.7                  |
|                                                                                            | WBTR        | D                            | 47.4                  | D                           | 41.3                  | D                              | 53.3                  | D                            | 50.6                  |
| Traffic Signal - Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza Driveways |             |                              |                       |                             |                       |                                |                       |                              |                       |
| Overall                                                                                    |             | A                            | 4.3                   | B                           | 10.2                  | B                              | 18.1                  | B                            | 15.4                  |
| Black Rock Turnpike                                                                        | SB          | A                            | 3.3                   | A                           | 8.1                   | B                              | 15.4                  | B                            | 14.6                  |
|                                                                                            | NB          | A                            | 2.2                   | A                           | 5.4                   | C                              | 21.6                  | B                            | 12.1                  |
| Turnpike Shopping Center<br>Driveway                                                       | EBLT        | D                            | 35.4                  | D                           | 38.2                  | C                              | 27.5                  | D                            | 35.3                  |
|                                                                                            | EBR         | A                            | 0.4                   | A                           | 1.8                   | A                              | 3.9                   | A                            | 7.1                   |
| Fairway Plaza Driveway                                                                     | WBL         | C                            | 29.8                  | C                           | 27.2                  | C                              | 21.1                  | C                            | 29.5                  |
|                                                                                            | WBTR        | A                            | 0.2                   | A                           | 0.3                   | A                              | 0.2                   | A                            | 0.3                   |
| Traffic Signal - Black Rock Turnpike at Katona Drive & Katona Drive Extension              |             |                              |                       |                             |                       |                                |                       |                              |                       |
| Overall                                                                                    |             | A                            | 5.6                   | A                           | 8.0                   | A                              | 6.4                   | A                            | 8.8                   |
| Black Rock Turnpike                                                                        | SB          | A                            | 3.3                   | A                           | 4.0                   | A                              | 2.4                   | A                            | 4.4                   |
|                                                                                            | NB          | A                            | 4.3                   | A                           | 6.9                   | A                              | 5.7                   | A                            | 7.8                   |
| Katona Drive                                                                               | EBLT        | D                            | 40.6                  | D                           | 48.8                  | D                              | 46.5                  | E                            | 57.0                  |
|                                                                                            | EBR         | A                            | 0.8                   | A                           | 3.5                   | A                              | 5.0                   | A                            | 3.5                   |
| Katona Drive Extension                                                                     | WBL         | C                            | 25.0                  | C                           | 26.7                  | C                              | 24.0                  | C                            | 30.0                  |
|                                                                                            | WBTR        | C                            | 23.0                  | C                           | 20.4                  | B                              | 14.9                  | B                            | 17.0                  |
| Traffic Signal - Black Rock Turnpike at Burroughs Road                                     |             |                              |                       |                             |                       |                                |                       |                              |                       |
| Overall                                                                                    |             | B                            | 14.5                  | B                           | 11.0                  | B                              | 10.8                  | B                            | 11.1                  |
| Black Rock Turnpike                                                                        | SB          | A                            | 6.7                   | A                           | 4.8                   | A                              | 5.6                   | A                            | 3.5                   |
|                                                                                            | NB          | B                            | 10.9                  | A                           | 7.4                   | A                              | 6.2                   | A                            | 7.7                   |
| Burroughs Road                                                                             | EB          | B                            | 18.9                  | C                           | 24.7                  | C                              | 26.3                  | C                            | 29.5                  |
|                                                                                            | WB          | D                            | 36.6                  | D                           | 40.0                  | D                              | 42.4                  | D                            | 48.2                  |
| Traffic Signal - Black Rock Turnpike at Tunxis Hill Cutoff, Moritz Place & Whitewood Drive |             |                              |                       |                             |                       |                                |                       |                              |                       |
| Overall                                                                                    |             | B                            | 12.0                  | B                           | 11.4                  | B                              | 13.9                  | B                            | 15.8                  |
| Black Rock Turnpike                                                                        | SBLT        | A                            | 7.9                   | A                           | 6.7                   | B                              | 10.6                  | A                            | 9.6                   |
|                                                                                            | SBR         | A                            | 2.7                   | A                           | 1.7                   | A                              | 2.8                   | A                            | 4.4                   |
| Tunxis Hill Cutoff                                                                         | NB          | B                            | 12.1                  | A                           | 10.0                  | B                              | 11.0                  | B                            | 13.9                  |
| Black Rock Turnpike                                                                        | NWB         | C                            | 22.5                  | C                           | 26.7                  | C                              | 29.8                  | C                            | 33.6                  |
| Moritz Place                                                                               | NEB         | C                            | 30.5                  | D                           | 36.6                  | D                              | 35.2                  | D                            | 42.9                  |
| Whitewood Drive                                                                            | SWB         | C                            | 33.8                  | D                           | 37.3                  | C                              | 34.0                  | D                            | 45.5                  |



**TABLE 5 (CONTINUED)**

2040 Background-Optimized Conditions - Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh)

|                                                            | Lane Use | Weekday Morning Peak Hour |                    | Weekday Midday Peak Hour |                    | Weekday Afternoon Peak Hour |                    | Saturday Midday Peak Hour |                    |
|------------------------------------------------------------|----------|---------------------------|--------------------|--------------------------|--------------------|-----------------------------|--------------------|---------------------------|--------------------|
|                                                            |          | LOS                       | Avg. Delay (s/veh) | LOS                      | Avg. Delay (s/veh) | LOS                         | Avg. Delay (s/veh) | LOS                       | Avg. Delay (s/veh) |
| Unsignalized TWSC - Tunxis Hill Cutoff at Tunxis Hill Road |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Tunxis Hill Road                                           | EBL      | A                         | 0.0                | C                        | 22.3               | A                           | 0.0                | D                         | 26.9               |
|                                                            | EBR      | A                         | 9.7                | B                        | 10.4               | B                           | 11.4               | B                         | 10.6               |
| Tunxis Hill Cutoff                                         | NBL      | A                         | 8.2                | A                        | 8.7                | A                           | 9.2                | A                         | 8.8                |
| Unsignalized TWSC - Black Rock Turnpike at Judd Street     |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Black Rock Turnpike                                        | NBL      | A                         | 8.6                | A                        | 8.9                | A                           | 9.0                | A                         | 9.2                |
| Judd Street                                                | EB       | B                         | 14.4               | C                        | 16.0               | C                           | 20.6               | C                         | 19.1               |

TABLE 6

2040 Background-Optimized Conditions - Intersection Operation Summary - Vehicular 50<sup>th</sup> / 95<sup>th</sup> Percentile Queue (In Feet)

|                                                                                                       |                      | Weekday Morning<br>Peak Hour |                  | Weekday Midday<br>Peak Hour |                  | Weekday Afternoon<br>Peak Hour |                  | Saturday Midday<br>Peak Hour |                  |
|-------------------------------------------------------------------------------------------------------|----------------------|------------------------------|------------------|-----------------------------|------------------|--------------------------------|------------------|------------------------------|------------------|
| Lane<br>Use                                                                                           | Available<br>Storage | Avg.<br>Queues               | Design<br>Queues | Avg.<br>Queues              | Design<br>Queues | Avg.<br>Queues                 | Design<br>Queues | Avg.<br>Queues               | Design<br>Queues |
| <b>Traffic Signal - Black Rock Turnpike at Old Black Rock Turnpike &amp; Tahmore Drive</b>            |                      |                              |                  |                             |                  |                                |                  |                              |                  |
| Old Black Rock Turnpike                                                                               | EB                   | 1000                         | 5                | 16                          | 0                | 0                              | 4                | 4                            | 18               |
| Tahmore Drive                                                                                         | WB                   | 615                          | 155              | 281                         | 28               | 33                             | 101              | 89                           | 150              |
| Black Rock Turnpike                                                                                   | NB                   | 1000                         | 47               | 79                          | 14               | 85                             | 82               | 122                          | 107              |
|                                                                                                       | SB                   | 1000                         | 254              | 483                         | 133              | 291                            | 691              | 352                          | 573              |
| <b>Traffic Signal - Black Rock Turnpike at Samp Mortar Drive</b>                                      |                      |                              |                  |                             |                  |                                |                  |                              |                  |
| Samp Mortar Drive                                                                                     | EBL                  | 1000                         | 26               | 54                          | 47               | 80                             | 137              | 78                           | 120              |
|                                                                                                       | EBR                  | 1000                         | 0                | 38                          | 0                | 43                             | 26               | 11                           | 56               |
|                                                                                                       | NBL                  | 100                          | 10               | 99                          | 13               | 28                             | 15               | 13                           | 28               |
| Black Rock Turnpike                                                                                   | NBT                  | 750                          | 132              | 431                         | 85               | 130                            | 149              | 122                          | 155              |
|                                                                                                       | SB                   | 1000                         | 115              | 188                         | 106              | 96                             | 136              | 166                          | 157              |
| <b>Traffic Signal - Black Rock Turnpike at Brookside Drive</b>                                        |                      |                              |                  |                             |                  |                                |                  |                              |                  |
| Brookside Drive                                                                                       | EB                   | 900                          | 32               | 62                          | 46               | 89                             | 147              | 79                           | 124              |
| Black Rock Turnpike                                                                                   | NB                   | 170                          | 84               | 80                          | 71               | 74                             | 38               | 65                           | 100              |
|                                                                                                       | SB                   | 750                          | 7                | 5                           | 33               | 78                             | 68               | 137                          | 88               |
| <b>Traffic Signal - Black Rock Turnpike at Fairfield Woods Road &amp; Commercial Driveway</b>         |                      |                              |                  |                             |                  |                                |                  |                              |                  |
| Commercial Driveway                                                                                   | EBLT                 | 35                           | 2                | 8                           | 10               | 24                             | 26               | 54                           | 64               |
|                                                                                                       | EBR                  | 35                           | 0                | 0                           | 0                | 0                              | 0                | 0                            | 0                |
| Fairfield Woods Road                                                                                  | WBLT                 | 1000                         | 17               | 41                          | 38               | 64                             | 47               | 96                           | 111              |
|                                                                                                       | WBR                  | 1000                         | 146              | 272                         | 88               | 123                            | 63               | 125                          | 127              |
| Black Rock Turnpike                                                                                   | NB                   | 1000                         | 121              | 167                         | 73               | 133                            | 57               | 82                           | 154              |
|                                                                                                       | SB                   | 170                          | 17               | 20                          | 40               | 153                            | 65               | 213                          | 125              |
| <b>Traffic Signal - Black Rock Turnpike at Stillson Road</b>                                          |                      |                              |                  |                             |                  |                                |                  |                              |                  |
| Black Rock Turnpike                                                                                   | SBL                  | 200                          | 40               | 102                         | 58               | 114                            | 68               | 143                          | 155              |
|                                                                                                       | SBTR                 | 1000                         | 201              | 261                         | 270              | 346                            | 361              | 492                          | 332              |
|                                                                                                       | NBL                  | 175                          | 146              | 245                         | 91               | 188                            | 112              | 244                          | 238              |
|                                                                                                       | NBTR                 | 680                          | 301              | 357                         | 229              | 298                            | 247              | 316                          | 294              |
|                                                                                                       | EBL                  | 210                          | 75               | 106                         | 94               | 159                            | 120              | 191                          | 119              |
| Stillson Road                                                                                         | EBTR                 | 1000                         | 151              | 201                         | 211              | 358                            | 381              | 581                          | 272              |
|                                                                                                       | WBL                  | 170                          | 50               | 76                          | 78               | 136                            | 99               | 227                          | 242              |
|                                                                                                       | WBTR                 | 1000                         | 322              | 393                         | 159              | 256                            | 244              | 360                          | 255              |
| <b>Traffic Signal - Black Rock Turnpike at Turnpike Shopping Center &amp; Fairway Plaza Driveways</b> |                      |                              |                  |                             |                  |                                |                  |                              |                  |
| Black Rock Turnpike                                                                                   | SB                   | 680                          | 33               | 53                          | 92               | 143                            | 140              | 190                          | 143              |
|                                                                                                       | NB                   | 405                          | 18               | 21                          | 33               | 41                             | 93               | 159                          | 42               |
| Turnpike Shopping                                                                                     | EBLT                 | 25                           | 29               | 54                          | 83               | 143                            | 86               | 142                          | 104              |
| Center Driveway                                                                                       | EBR                  | 25                           | 0                | 0                           | 0                | 8                              | 0                | 24                           | 7                |
| Fairway Plaza Driveway                                                                                | WBLT                 | 25                           | 13               | 36                          | 31               | 63                             | 21               | 47                           | 55               |
|                                                                                                       | WBR                  | 25                           | 0                | 0                           | 0                | 0                              | 0                | 0                            | 0                |
| <b>Traffic Signal - Black Rock Turnpike at Katona Drive &amp; Katona Drive Extension</b>              |                      |                              |                  |                             |                  |                                |                  |                              |                  |
| Black Rock Turnpike                                                                                   | SB                   | 405                          | 34               | 51                          | 64               | 90                             | 30               | 53                           | 91               |
|                                                                                                       | NB                   | 300                          | 34               | 31                          | 48               | 32                             | 36               | 33                           | 131              |
| Katona Drive                                                                                          | EBLT                 | 1000                         | 35               | 73                          | 54               | 91                             | 59               | 94                           | 70               |
|                                                                                                       | EBR                  | 250                          | 0                | 0                           | 0                | 8                              | 0                | 15                           | 0                |
| Katona Drive Extension                                                                                | WBL                  | 135                          | 1                | 7                           | 2                | 9                              | 0                | 4                            | 2                |
|                                                                                                       | WBTR                 | 135                          | 1                | 8                           | 6                | 21                             | 2                | 14                           | 1                |
| <b>Traffic Signal - Black Rock Turnpike at Burroughs Road</b>                                         |                      |                              |                  |                             |                  |                                |                  |                              |                  |
| Black Rock Turnpike                                                                                   | SB                   | 275                          | 37               | 45                          | 25               | 36                             | 48               | 72                           | 89               |
|                                                                                                       | NB                   | 835                          | 104              | 235                         | 50               | 161                            | 53               | 155                          | 68               |
| Burroughs Road                                                                                        | EB                   | 1000                         | 39               | 62                          | 40               | 63                             | 58               | 100                          | 49               |
|                                                                                                       | WB                   | 1000                         | 137              | 180                         | 114              | 156                            | 102              | 167                          | 131              |
| <b>Traffic Signal - Black Rock Turnpike at Tunxis Hill Cutoff, Moritz Place &amp; Whitewood Drive</b> |                      |                              |                  |                             |                  |                                |                  |                              |                  |
| Black Rock Turnpike                                                                                   | SBLT                 | 835                          | 31               | 134                         | 43               | 148                            | 95               | 279                          | 95               |
|                                                                                                       | SBR                  | 835                          | 0                | 125                         | 0                | 70                             | 0                | 76                           | 17               |
| Tunxis Hill Cutoff                                                                                    | NB                   | 1000                         | 67               | 165                         | 38               | 106                            | 45               | 108                          | 104              |
| Black Rock Turnpike                                                                                   | NWB                  | 1000                         | 58               | 77                          | 67               | 108                            | 92               | 139                          | 108              |
| Moritz Place                                                                                          | NEB                  | 935                          | 1                | 8                           | 5                | 18                             | 6                | 21                           | 9                |
| Whitewood Drive                                                                                       | SWB                  | 785                          | 10               | 33                          | 7                | 21                             | 3                | 14                           | 13               |

TABLE 6 (CONTINUED)

2040 Background-Optimized Conditions - Intersection Operation Summary - Vehicular 95<sup>th</sup> Percentile Queue (In Feet)

|                                                                   |                      |      | Weekday Morning<br>Peak Hour<br>Design<br>Queues | Weekday Midday<br>Peak Hour<br>Design<br>Queues | Weekday<br>Afternoon<br>Design<br>Queues | Saturday Midday<br>Peak Hour<br>Design<br>Queues |
|-------------------------------------------------------------------|----------------------|------|--------------------------------------------------|-------------------------------------------------|------------------------------------------|--------------------------------------------------|
| Lane<br>Use                                                       | Available<br>Storage |      |                                                  |                                                 |                                          |                                                  |
| <b>Unsignalized TWSC - Tunxis Hill Cutoff at Tunxis Hill Road</b> |                      |      |                                                  |                                                 |                                          |                                                  |
| Tunxis Hill Road                                                  | EBL                  | 1000 | 0                                                | 0                                               | 0                                        | 3                                                |
|                                                                   | EBR                  | 1000 | 8                                                | 8                                               | 13                                       | 8                                                |
| Tunxis Hill Cutoff                                                | NBL                  | 200  | 5                                                | 3                                               | 5                                        | 3                                                |
| <b>Unsignalized TWSC - Black Rock Turnpike at Judd Street</b>     |                      |      |                                                  |                                                 |                                          |                                                  |
| Black Rock Turnpike                                               | NBL                  | 25   | 5                                                | 5                                               | 5                                        | 5                                                |
| Judd Street                                                       | EB                   | 1000 | 23                                               | 23                                              | 48                                       | 35                                               |



**TABLE 7**

2040 Concept A Conditions - Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh)

|                                                                                 | Lane Use | Weekday Morning Peak Hour |                    | Weekday Midday Peak Hour |                    | Weekday Afternoon Peak Hour |                    | Saturday Midday Peak Hour |                    |
|---------------------------------------------------------------------------------|----------|---------------------------|--------------------|--------------------------|--------------------|-----------------------------|--------------------|---------------------------|--------------------|
|                                                                                 |          | LOS                       | Avg. Delay (s/veh) | LOS                      | Avg. Delay (s/veh) | LOS                         | Avg. Delay (s/veh) | LOS                       | Avg. Delay (s/veh) |
| Traffic Signal - Black Rock Turnpike at Old Black Rock Turnpike & Tahmore Drive |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                         |          | C                         | 27.7               | A                        | 7.0                | C                           | 34.3               | B                         | 15.9               |
| Old Black Rock Turnpike                                                         | EB       | C                         | 22.2               | A                        | 4.0                | A                           | 9.2                | C                         | 26.6               |
| Tahmore Drive                                                                   | WB       | D                         | 54.6               | D                        | 41.9               | D                           | 52.0               | D                         | 43.3               |
| Black Rock Turnpike                                                             | NB       | B                         | 15.4               | A                        | 2.7                | A                           | 8.7                | A                         | 9.0                |
|                                                                                 | SB       | C                         | 24.6               | A                        | 6.3                | D                           | 52.9               | B                         | 16.1               |
| Traffic Signal - Black Rock Turnpike at Samp Mortar Drive                       |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                         |          | B                         | 12.1               | A                        | 9.4                | C                           | 25.8               | B                         | 15.1               |
| Samp Mortar Drive                                                               | EBL      | E                         | 62.9               | E                        | 55.1               | D                           | 40.7               | D                         | 39.7               |
|                                                                                 | EBR      | B                         | 17.1               | B                        | 13.7               | C                           | 25.7               | A                         | 9.6                |
|                                                                                 | NBL      | B                         | 15.3               | A                        | 5.6                | C                           | 30.4               | B                         | 15.3               |
| Black Rock Turnpike                                                             | NBT      | A                         | 3.5                | A                        | 2.6                | B                           | 10.0               | A                         | 7.5                |
|                                                                                 | SBT      | B                         | 15.8               | B                        | 10.7               | D                           | 38.7               | C                         | 20.5               |
|                                                                                 | SBR      | A                         | 8.3                | A                        | 5.3                | A                           | 6.1                | A                         | 4.5                |
| Traffic Signal - Black Rock Turnpike at Brookside Drive & Shell Driveway        |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                         |          | A                         | 4.2                | A                        | 4.2                | A                           | 7.3                | A                         | 4.7                |
| Brookside Drive                                                                 | EBL      | E                         | 58.8               | D                        | 52.0               | E                           | 59.4               | D                         | 37.9               |
|                                                                                 | EBLTR    | D                         | 41.8               | B                        | 19.8               | C                           | 22.1               | A                         | 1.8                |
| Shell Driveway                                                                  | WB       | A                         | 5.9                | A                        | 1.6                | A                           | 2.7                | B                         | 16.4               |
| Black Rock Turnpike                                                             | NB       | A                         | 2.5                | A                        | 2.2                | A                           | 2.3                | A                         | 2.0                |
|                                                                                 | SB       | A                         | 1.5                | A                        | 1.5                | A                           | 3.9                | A                         | 3.9                |
| Traffic Signal - Black Rock Turnpike at Fairfield Woods Road                    |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                         |          | C                         | 22.7               | B                        | 18.1               | B                           | 14.9               | B                         | 12.8               |
| Fairfield Woods Road                                                            | WBL      | C                         | 28.6               | D                        | 39.5               | D                           | 49.5               | D                         | 36.8               |
|                                                                                 | WBR      | E                         | 57.9               | E                        | 58.9               | E                           | 62.9               | D                         | 46.7               |
|                                                                                 | NB       | C                         | 20.4               | A                        | 9.8                | B                           | 13.6               | B                         | 12.0               |
| Black Rock Turnpike                                                             | SBL      | A                         | 6.1                | A                        | 2.3                | B                           | 11.2               | A                         | 2.0                |
|                                                                                 | SBT      | A                         | 5.5                | A                        | 1.2                | A                           | 6.7                | A                         | 5.6                |
| Traffic Signal - Black Rock Turnpike at Stillson Road                           |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                         |          | D                         | 36.7               | C                        | 29.6               | D                           | 42.9               | D                         | 40.7               |
| Black Rock Turnpike                                                             | SBL      | D                         | 52.1               | D                        | 53.5               | E                           | 64.2               | E                         | 73.1               |
|                                                                                 | SBTR     | D                         | 40.5               | C                        | 27.9               | D                           | 41.4               | D                         | 41.2               |
|                                                                                 | NBL      | D                         | 54.1               | D                        | 52.3               | E                           | 71.2               | E                         | 72.6               |
|                                                                                 | NBTR     | C                         | 33.3               | C                        | 22.9               | C                           | 30.0               | C                         | 32.5               |
|                                                                                 | EBL      | C                         | 33.5               | C                        | 26.5               | D                           | 44.1               | D                         | 39.5               |
| Stillson Road                                                                   | EBT      | C                         | 30.2               | D                        | 42.1               | E                           | 58.6               | D                         | 49.0               |
|                                                                                 | EBR      | A                         | 0.5                | A                        | 6.5                | B                           | 18.5               | B                         | 15.6               |
|                                                                                 | WBL      | B                         | 17.3               | C                        | 25.2               | D                           | 36.6               | C                         | 32.5               |
|                                                                                 | WBT      | D                         | 46.6               | D                        | 45.4               | E                           | 64.1               | D                         | 54.2               |
|                                                                                 | WBR      | C                         | 25.5               | C                        | 32.5               | D                           | 38.9               | D                         | 36.9               |
| Traffic Signal - Black Rock Turnpike at Burroughs Road                          |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                         |          | B                         | 20.0               | A                        | 9.6                | A                           | 9.8                | A                         | 9.9                |
| Black Rock Turnpike                                                             | SBL      | A                         | 9.6                | A                        | 7.2                | A                           | 8.3                | A                         | 9.2                |
|                                                                                 | SBTR     | A                         | 5.0                | A                        | 6.5                | A                           | 6.1                | A                         | 5.3                |
|                                                                                 | NBT      | C                         | 23.6               | B                        | 10.4               | B                           | 10.8               | B                         | 11.7               |
|                                                                                 | NBR      | A                         | 1.4                | A                        | 1.5                | A                           | 1.2                | A                         | 1.2                |
| Burroughs Road                                                                  | EB       | C                         | 28.2               | B                        | 17.2               | C                           | 22.3               | C                         | 22.4               |
|                                                                                 | WBL      | D                         | 49.3               | C                        | 25.7               | C                           | 26.5               | C                         | 26.2               |
|                                                                                 | WBTR     | C                         | 22.7               | B                        | 11.8               | B                           | 13.3               | B                         | 13.7               |

**TABLE 7 (CONTINUED)**

2040 Concept A Conditions - Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh)

|                                                                                               | Lane Use | Weekday Morning Peak Hour |                    | Weekday Midday Peak Hour |                    | Weekday Afternoon Peak Hour |                    | Saturday Midday Peak Hour |                    |
|-----------------------------------------------------------------------------------------------|----------|---------------------------|--------------------|--------------------------|--------------------|-----------------------------|--------------------|---------------------------|--------------------|
|                                                                                               |          | LOS                       | Avg. Delay (s/veh) | LOS                      | Avg. Delay (s/veh) | LOS                         | Avg. Delay (s/veh) | LOS                       | Avg. Delay (s/veh) |
| Unsignalized TWSC - Tunxis Hill Cutoff at Tunxis Hill Road                                    |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                                       |          | --                        | --                 | --                       | --                 | --                          | --                 | --                        | --                 |
| Tunxis Hill Road                                                                              | EBL      | A                         | 0.0                | C                        | 22.3               | A                           | 0.0                | D                         | 26.9               |
|                                                                                               | EBR      | A                         | 9.7                | B                        | 10.4               | B                           | 11.4               | B                         | 10.6               |
| Tunxis Hill Cutoff                                                                            | NBL      | A                         | 8.2                | A                        | 8.7                | A                           | 9.2                | A                         | 8.8                |
| Unsignalized TWSC - Black Rock Turnpike at Judd Street                                        |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                                       |          | --                        | --                 | --                       | --                 | --                          | --                 | --                        | --                 |
| Black Rock Turnpike                                                                           | NBL      | A                         | 8.6                | A                        | 9.0                | A                           | 9.0                | A                         | 9.2                |
| Judd Street                                                                                   | EB       | C                         | 15.4               | C                        | 17.6               | C                           | 24.9               | C                         | 21.9               |
| Unsignalized TWSC - Black Rock Turnpike at Moritz Place                                       |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                                       |          | --                        | --                 | --                       | --                 | --                          | --                 | --                        | --                 |
| Moritz Place                                                                                  | EBR      | B                         | 14.2               | C                        | 16.4               | C                           | 20.5               | C                         | 19.0               |
| Unsignalized TWSC - Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza Driveways |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                                       |          | --                        | --                 | --                       | --                 | --                          | --                 | --                        | --                 |
| Turnpike Shopping Dwy                                                                         | EBR      | B                         | 11.1               | C                        | 16.2               | D                           | 26.6               | C                         | 23.4               |
| Black Rock Turnpike                                                                           | SBL      | B                         | 11.2               | B                        | 10.5               | B                           | 11.3               | B                         | 12.1               |
|                                                                                               | NBL      | A                         | 8.9                | A                        | 10.0               | B                           | 11.1               | B                         | 10.7               |
| Fairway Plaza Driveway                                                                        | WBR      | C                         | 19.9               | C                        | 16.7               | C                           | 19.7               | C                         | 22.1               |
| Roundabout - Black Rock Turnpike at Old Navy & Trader Joe's Plaza Driveways                   |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                                       |          | A                         | 6.2                | A                        | 8.6                | B                           | 11.6               | B                         | 13.8               |
| Old Navy Plaza Driveway                                                                       | EB       | A                         | 5.9                | B                        | 11.9               | C                           | 18.3               | D                         | 25.7               |
|                                                                                               | SBLT     | A                         | 6.6                | B                        | 10.1               | B                           | 14.6               | C                         | 16.4               |
| Black Rock Turnpike                                                                           | SBR      | A                         | 2.8                | A                        | 3.3                | A                           | 3.4                | A                         | 3.7                |
|                                                                                               | NBLT     | A                         | 5.7                | A                        | 6.5                | A                           | 7.4                | A                         | 8.4                |
| Trader Joe's Plaza Dwy                                                                        | NBTR     | A                         | 6.2                | A                        | 7.1                | A                           | 8.1                | A                         | 9.4                |
|                                                                                               | WB       | A                         | 6.7                | A                        | 8.5                | A                           | 10.0               | B                         | 12.1               |
| Roundabout - Black Rock Turnpike at Katona Drive & Katona Drive Extension                     |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                                       |          | E                         | 39.8               | C                        | 15.6               | D                           | 25.1               | F                         | 57.5               |
| Katona Drive                                                                                  | EB       | A                         | 6.5                | B                        | 11.6               | C                           | 19.2               | C                         | 19.5               |
|                                                                                               | SBLT     | A                         | 5.3                | A                        | 7.7                | A                           | 9.4                | B                         | 10.3               |
| Black Rock Turnpike                                                                           | SBTR     | A                         | 5.6                | A                        | 8.6                | B                           | 11.0               | B                         | 12.2               |
|                                                                                               | NB       | F                         | 64.6               | D                        | 27.6               | F                           | 52.2               | F                         | 134.3              |
| Katona Drive Extension                                                                        | WB       | B                         | 13.8               | B                        | 13.8               | B                           | 14.8               | D                         | 27.0               |
| Roundabout - Black Rock Turnpike at Tunxis Hill Cutoff & Whitewood Drive                      |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                                       |          | B                         | 12.5               | B                        | 12.2               | C                           | 21.2               | C                         | 17.4               |
| Black Rock Turnpike                                                                           | EBLR     | A                         | 7.9                | B                        | 11.2               | C                           | 21.6               | B                         | 14.4               |
|                                                                                               | SBTR     | A                         | 8.7                | B                        | 13.3               | C                           | 24.2               | C                         | 19.1               |
| Tunxis Hill Cutoff                                                                            | NBLT     | C                         | 19.2               | B                        | 11.2               | B                           | 12.7               | C                         | 17.5               |
| Whitewood Drive                                                                               | WB       | A                         | 9.1                | A                        | 7.0                | A                           | 7.3                | A                         | 8.5                |

TABLE 8

2040 Concept A Conditions - Intersection Operation Summary - Vehicular 50<sup>th</sup> / 95<sup>th</sup> Percentile Queue (In Feet)

|                                                                                 |             |                      | Weekday Morning<br>Peak Hour |                  | Weekday Midday<br>Peak Hour |                  | Weekday Afternoon<br>Peak Hour |                  | Saturday Midday<br>Peak Hour |                  |
|---------------------------------------------------------------------------------|-------------|----------------------|------------------------------|------------------|-----------------------------|------------------|--------------------------------|------------------|------------------------------|------------------|
|                                                                                 | Lane<br>Use | Available<br>Storage | Avg.<br>Queues               | Design<br>Queues | Avg.<br>Queues              | Design<br>Queues | Avg.<br>Queues                 | Design<br>Queues | Avg.<br>Queues               | Design<br>Queues |
| Traffic Signal - Black Rock Turnpike at Old Black Rock Turnpike & Tahmore Drive |             |                      |                              |                  |                             |                  |                                |                  |                              |                  |
| Old Black Rock Turnpike                                                         | EB          | 1000                 | 8                            | 21               | 0                           | 2                | 0                              | 8                | 4                            | 16               |
| Tahmore Drive                                                                   | WB          | 615                  | 299                          | 347              | 46                          | 89               | 61                             | 123              | 74                           | 132              |
| Black Rock Turnpike                                                             | NB          | 1000                 | 419                          | 389              | 44                          | 20               | 215                            | 715              | 221                          | 544              |
|                                                                                 | SB          | 1000                 | 414                          | 778              | 152                         | 308              | 988                            | 1196             | 324                          | 683              |
| Traffic Signal - Black Rock Turnpike at Samp Mortar Drive                       |             |                      |                              |                  |                             |                  |                                |                  |                              |                  |
| Samp Mortar Drive                                                               | EBL         | 1000                 | 49                           | 87               | 64                          | 102              | 123                            | 187              | 68                           | 107              |
|                                                                                 | EBR         | 1000                 | 0                            | 50               | 0                           | 48               | 111                            | 218              | 0                            | 42               |
| Black Rock Turnpike                                                             | NBL         | 50                   | 81                           | 238              | 16                          | 45               | 56                             | 110              | 24                           | 95               |
|                                                                                 | NBT         | 750                  | 34                           | 180              | 42                          | 63               | 96                             | 305              | 50                           | 205              |
|                                                                                 | SBT         | 1000                 | 189                          | 421              | 147                         | 214              | 691                            | 742              | 298                          | 671              |
|                                                                                 | SBR         | 50                   | 39                           | 76               | 7                           | 18               | 17                             | 19               | 4                            | 10               |
| Traffic Signal - Black Rock Turnpike at Brookside Drive & Shell Driveway        |             |                      |                              |                  |                             |                  |                                |                  |                              |                  |
| Brookside Drive                                                                 | EBL         | 50                   | 38                           | 71               | 48                          | 89               | 98                             | 140              | 46                           | 82               |
|                                                                                 | EBLTR       | 900                  | 22                           | 53               | 6                           | 44               | 25                             | 64               | 0                            | 0                |
| Shell Driveway                                                                  | WB          | 25                   | 0                            | 0                | 0                           | 0                | 0                              | 0                | 3                            | 32               |
| Black Rock Turnpike                                                             | NB          | 180                  | 60                           | 53               | 72                          | 58               | 52                             | 2                | 46                           | 37               |
|                                                                                 | SB          | 300                  | 11                           | 40               | 15                          | 51               | 57                             | 207              | 63                           | 47               |
| Traffic Signal - Black Rock Turnpike at Fairfield Woods Road                    |             |                      |                              |                  |                             |                  |                                |                  |                              |                  |
| Fairfield Woods Road                                                            | WBL         | 1000                 | 32                           | 57               | 51                          | 79               | 70                             | 103              | 64                           | 100              |
|                                                                                 | WBR         | 1000                 | 275                          | 354              | 120                         | 158              | 95                             | 133              | 78                           | 119              |
| Black Rock Turnpike                                                             | NB          | 365                  | 232                          | 334              | 128                         | 198              | 143                            | 313              | 138                          | 232              |
|                                                                                 | SBL         | 180                  | 8                            | 22               | 2                           | 9                | 16                             | 120              | 4                            | 3                |
|                                                                                 | SBT         | 180                  | 52                           | 104              | 1                           | 6                | 47                             | 777              | 24                           | 57               |
| Traffic Signal - Black Rock Turnpike at Stillson Road                           |             |                      |                              |                  |                             |                  |                                |                  |                              |                  |
| Black Rock Turnpike                                                             | SBL         | 200                  | 31                           | 68               | 44                          | 104              | 67                             | 122              | 68                           | 146              |
|                                                                                 | SBTR        | 500                  | 159                          | 214              | 187                         | 256              | 345                            | 434              | 323                          | 408              |
|                                                                                 | NBL         | 200                  | 116                          | 202              | 67                          | 146              | 108                            | 209              | 111                          | 216              |
|                                                                                 | NBTR        | 1000                 | 247                          | 303              | 156                         | 213              | 233                            | 300              | 280                          | 355              |
| Stillson Road                                                                   | EBL         | 400                  | 67                           | 98               | 80                          | 136              | 133                            | 222              | 127                          | 215              |
|                                                                                 | EBT         | 1000                 | 98                           | 142              | 102                         | 180              | 215                            | 346              | 153                          | 238              |
|                                                                                 | EBR         | 75                   | 0                            | 0                | 0                           | 38               | 44                             | 112              | 29                           | 91               |
|                                                                                 | WBL         | 170                  | 45                           | 73               | 71                          | 122              | 114                            | 170              | 144                          | 212              |
|                                                                                 | WBT         | 1000                 | 236                          | 308              | 100                         | 187              | 217                            | 341              | 211                          | 304              |
|                                                                                 | WBR         | 75                   | 25                           | 49               | 26                          | 59               | 31                             | 64               | 40                           | 78               |
|                                                                                 |             |                      |                              |                  |                             |                  |                                |                  |                              |                  |
| Traffic Signal - Black Rock Turnpike at Burroughs Road                          |             |                      |                              |                  |                             |                  |                                |                  |                              |                  |
| Black Rock Turnpike                                                             | SBL         | 65                   | 5                            | 16               | 8                           | 24               | 11                             | 34               | 11                           | 37               |
|                                                                                 | SBTR        | 275                  | 43                           | 53               | 61                          | 94               | 76                             | 113              | 68                           | 101              |
|                                                                                 | NBT         | 925                  | 282                          | 609              | 113                         | 223              | 155                            | 283              | 180                          | 336              |
|                                                                                 | NBR         | 130                  | 0                            | 11               | 0                           | 14               | 0                              | 16               | 0                            | 12               |
| Burroughs Road                                                                  | EB          | 1000                 | 47                           | 82               | 18                          | 53               | 36                             | 95               | 27                           | 70               |
|                                                                                 | WBL         | 125                  | 77                           | 148              | 29                          | 86               | 36                             | 99               | 38                           | 93               |
|                                                                                 | WBTR        | 1000                 | 50                           | 91               | 11                          | 47               | 13                             | 55               | 15                           | 58               |



**TABLE 8 (CONTINUED)**

2040 Concept A Conditions - Intersection Operation Summary - Vehicular 95<sup>th</sup> Percentile Queue (In Feet)

|                                                                                                          | Lane Use | Available Storage | Weekday Morning Peak Hour Design Queues | Weekday Midday Peak Hour Design Queues | Weekday Afternoon Design Queues | Saturday Midday Peak Hour Design Queues |
|----------------------------------------------------------------------------------------------------------|----------|-------------------|-----------------------------------------|----------------------------------------|---------------------------------|-----------------------------------------|
| <b>Unsignalized TWSC - Tunxis Hill Cutoff at Tunxis Hill Road</b>                                        |          |                   |                                         |                                        |                                 |                                         |
| Tunxis Hill Road                                                                                         | EBL      | 1000              | 0                                       | 0                                      | 0                               | 3                                       |
|                                                                                                          | EBR      | 1000              | 8                                       | 8                                      | 13                              | 8                                       |
| Tunxis Hill Cutoff                                                                                       | NBL      | 200               | 5                                       | 3                                      | 5                               | 3                                       |
| <b>Unsignalized TWSC - Black Rock Turnpike at Judd Street</b>                                            |          |                   |                                         |                                        |                                 |                                         |
| Black Rock Turnpike                                                                                      | NBL      | 25                | 5                                       | 5                                      | 5                               | 5                                       |
| Judd Street                                                                                              | EB       | 1000              | 23                                      | 25                                     | 60                              | 40                                      |
| <b>Unsignalized TWSC - Black Rock Turnpike at Moritz Place</b>                                           |          |                   |                                         |                                        |                                 |                                         |
| Moritz Place                                                                                             | EBR      | 935               | 0                                       | 3                                      | 5                               | 5                                       |
| <b>Unsignalized TWSC - Black Rock Turnpike at Turnpike Shopping Center &amp; Fairway Plaza Driveways</b> |          |                   |                                         |                                        |                                 |                                         |
| Turnpike Shopping Dwy                                                                                    | EBR      | 90                | 13                                      | 60                                     | 135                             | 120                                     |
|                                                                                                          | SBL      | 65                | 5                                       | 10                                     | 10                              | 15                                      |
| Black Rock Turnpike                                                                                      | NBL      | 100               | 3                                       | 8                                      | 13                              | 13                                      |
| Fairway Plaza Driveway                                                                                   | WBR      | 30                | 3                                       | 10                                     | 10                              | 18                                      |
| <b>Roundabout - Black Rock Turnpike at Old Navy &amp; Trader Joe's Plaza Driveways</b>                   |          |                   |                                         |                                        |                                 |                                         |
| Old Navy Plaza Driveway                                                                                  | EB       | 65                | 8                                       | 45                                     | 78                              | 125                                     |
|                                                                                                          | SBLT     | 365               | 53                                      | 108                                    | 188                             | 213                                     |
| Black Rock Turnpike                                                                                      | SBR      | 50                | 3                                       | 5                                      | 5                               | 8                                       |
|                                                                                                          | NBLT     | 500               | 35                                      | 40                                     | 48                              | 58                                      |
|                                                                                                          | NBTR     | 500               | 43                                      | 48                                     | 58                              | 73                                      |
| Trader Joe's Plaza Dwy                                                                                   | WB       | 125               | 8                                       | 28                                     | 38                              | 53                                      |
| <b>Roundabout - Black Rock Turnpike at Katona Drive &amp; Katona Drive Extension</b>                     |          |                   |                                         |                                        |                                 |                                         |
| Katona Drive                                                                                             | EB       | 1000              | 15                                      | 33                                     | 63                              | 65                                      |
|                                                                                                          | SBLT     | 1000              | 25                                      | 60                                     | 90                              | 98                                      |
| Black Rock Turnpike                                                                                      | SBTR     | 1000              | 30                                      | 75                                     | 118                             | 130                                     |
|                                                                                                          | NB       | 265               | 640                                     | 278                                    | 453                             | 878                                     |
| Katona Drive Extension                                                                                   | WB       | 135               | 13                                      | 30                                     | 28                              | 73                                      |
| <b>Roundabout - Black Rock Turnpike at Tunxis Hill Cutoff &amp; Whitewood Drive</b>                      |          |                   |                                         |                                        |                                 |                                         |
| Black Rock Turnpike                                                                                      | EBLR     | 1000              | 48                                      | 78                                     | 173                             | 115                                     |
|                                                                                                          | SBTR     | 925               | 80                                      | 165                                    | 348                             | 260                                     |
| Tunxis Hill Cutoff                                                                                       | NBLT     | 1000              | 180                                     | 73                                     | 85                              | 143                                     |
| Whitewood Drive                                                                                          | WB       | 785               | 5                                       | 3                                      | 0                               | 3                                       |

TABLE 9

2040 Concept B Conditions - Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh)

|                                                                                            | Lane Use | Weekday Morning Peak Hour |                    | Weekday Midday Peak Hour |                    | Weekday Afternoon Peak Hour |                    | Saturday Midday Peak Hour |                    |
|--------------------------------------------------------------------------------------------|----------|---------------------------|--------------------|--------------------------|--------------------|-----------------------------|--------------------|---------------------------|--------------------|
|                                                                                            |          | LOS                       | Avg. Delay (s/veh) | LOS                      | Avg. Delay (s/veh) | LOS                         | Avg. Delay (s/veh) | LOS                       | Avg. Delay (s/veh) |
| Traffic Signal - Black Rock Turnpike at Old Black Rock Turnpike & Tahmore Drive            |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                                    |          | C                         | 25.1               | A                        | 6.9                | C                           | 33.5               | B                         | 16.9               |
| Old Black Rock Turnpike                                                                    | EB       | C                         | 20.4               | A                        | 4.0                | A                           | 9.2                | C                         | 32.3               |
| Tahmore Drive                                                                              | WB       | D                         | 53.5               | D                        | 41.9               | D                           | 52.0               | D                         | 53.6               |
| Black Rock Turnpike                                                                        | NB       | B                         | 12.2               | A                        | 2.7                | A                           | 6.7                | A                         | 8.7                |
|                                                                                            | SB       | C                         | 21.6               | A                        | 6.3                | D                           | 52.9               | B                         | 15.9               |
| Traffic Signal - Black Rock Turnpike at Samp Mortar Drive                                  |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                                    |          | B                         | 13.9               | A                        | 9.5                | C                           | 25.2               | B                         | 14.8               |
| Samp Mortar Drive                                                                          | EBL      | D                         | 50.0               | D                        | 54.1               | D                           | 40.7               | D                         | 52.1               |
|                                                                                            | EBR      | B                         | 14.8               | B                        | 13.5               | C                           | 25.7               | B                         | 19.4               |
|                                                                                            | NBL      | B                         | 11.9               | A                        | 6.3                | D                           | 37.6               | B                         | 12.0               |
| Black Rock Turnpike                                                                        | NBT      | A                         | 1.8                | A                        | 3.0                | A                           | 7.0                | A                         | 3.9                |
|                                                                                            | SBT      | C                         | 26.1               | B                        | 10.5               | D                           | 38.7               | B                         | 18.5               |
|                                                                                            | SBR      | B                         | 13.7               | A                        | 5.2                | A                           | 6.1                | A                         | 8.6                |
| Traffic Signal - Black Rock Turnpike at Brookside Drive & Shell Driveway                   |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                                    |          | A                         | 4.8                | A                        | 4.7                | A                           | 9.6                | A                         | 6.8                |
| Brookside Drive                                                                            | EBL      | D                         | 46.9               | D                        | 52.0               | E                           | 59.4               | D                         | 53.6               |
|                                                                                            | EBLTR    | C                         | 33.6               | B                        | 19.9               | C                           | 22.1               | A                         | 5.6                |
| Shell Driveway                                                                             | WB       | A                         | 3.1                | A                        | 1.6                | A                           | 2.7                | C                         | 21.7               |
| Black Rock Turnpike                                                                        | NB       | A                         | 5.1                | A                        | 3.3                | A                           | 5.3                | A                         | 5.5                |
|                                                                                            | SB       | A                         | 0.8                | A                        | 1.5                | A                           | 6.3                | A                         | 3.5                |
| Traffic Signal - Black Rock Turnpike at Fairfield Woods Road & Commercial Driveway         |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                                    |          | C                         | 20.9               | B                        | 14.6               | B                           | 14.2               | B                         | 14.7               |
| Commercial Driveway                                                                        | EBLT     | C                         | 21.2               | C                        | 33.0               | D                           | 46.0               | D                         | 44.4               |
|                                                                                            | EBR      | A                         | 0.0                | A                        | 0.6                | A                           | 3.8                | A                         | 2.4                |
| Fairfield Woods Road                                                                       | WBLT     | C                         | 24.0               | E                        | 60.9               | E                           | 59.5               | E                         | 61.7               |
|                                                                                            | WBR      | D                         | 50.1               | D                        | 37.4               | E                           | 65.7               | E                         | 62.6               |
|                                                                                            | NBL      | B                         | 17.5               | B                        | 11.5               | B                           | 10.7               | A                         | 9.6                |
| Black Rock Turnpike                                                                        | NBTR     | C                         | 20.1               | B                        | 11.4               | B                           | 10.2               | A                         | 9.9                |
|                                                                                            | SBL      | A                         | 5.4                | A                        | 5.3                | B                           | 10.7               | A                         | 3.3                |
|                                                                                            | SBTR     | A                         | 5.6                | A                        | 5.8                | A                           | 5.7                | A                         | 4.8                |
| Traffic Signal - Black Rock Turnpike at Stillson Road                                      |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                                    |          | D                         | 36.7               | C                        | 29.4               | D                           | 41.7               | D                         | 40.6               |
| Black Rock Turnpike                                                                        | SBL      | D                         | 52.1               | D                        | 53.5               | E                           | 64.2               | E                         | 73.1               |
|                                                                                            | SBTR     | D                         | 40.5               | C                        | 27.9               | D                           | 41.4               | D                         | 41.2               |
|                                                                                            | NBL      | D                         | 54.1               | D                        | 52.3               | E                           | 71.2               | E                         | 72.6               |
|                                                                                            | NBTR     | C                         | 33.3               | C                        | 22.9               | C                           | 30.0               | C                         | 32.5               |
|                                                                                            | EBL      | C                         | 33.4               | C                        | 26.5               | D                           | 48.1               | D                         | 39.5               |
| Stillson Road                                                                              | EBT      | C                         | 30.2               | D                        | 39.7               | D                           | 54.9               | D                         | 49.0               |
|                                                                                            | EBR      | A                         | 0.5                | A                        | 6.3                | B                           | 17.9               | B                         | 15.6               |
|                                                                                            | WBL      | B                         | 17.2               | C                        | 25.0               | D                           | 35.2               | C                         | 31.0               |
|                                                                                            | WBT      | D                         | 46.6               | D                        | 45.4               | D                           | 52.3               | D                         | 54.2               |
|                                                                                            | WBR      | C                         | 25.5               | C                        | 32.5               | D                           | 36.2               | D                         | 36.9               |
| Traffic Signal - Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza Driveways |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                                    |          | A                         | 5.0                | B                        | 11.2               | B                           | 13.5               | B                         | 15.9               |
| Black Rock Turnpike                                                                        | SB       | A                         | 2.9                | A                        | 8.9                | B                           | 12.0               | B                         | 14.6               |
|                                                                                            | NB       | A                         | 2.5                | A                        | 9.1                | A                           | 9.6                | B                         | 13.5               |
| Turnpike Shopping Center Driveway                                                          | EBLT     | D                         | 48.3               | C                        | 32.3               | D                           | 38.7               | D                         | 35.3               |
|                                                                                            | EBR      | A                         | 0.6                | A                        | 1.2                | A                           | 6.8                | A                         | 7.1                |
| Fairway Plaza Driveway                                                                     | WBLT     | D                         | 40.0               | C                        | 24.2               | C                           | 27.5               | C                         | 29.5               |
|                                                                                            | WBR      | A                         | 0.3                | A                        | 0.3                | A                           | 0.3                | A                         | 0.3                |
| Traffic Signal - Black Rock Turnpike at Katona Drive & Katona Drive Extension              |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                                    |          | B                         | 10.9               | A                        | 8.1                | B                           | 12.4               | B                         | 13.0               |
| Black Rock Turnpike                                                                        | SB       | A                         | 2.7                | A                        | 3.1                | A                           | 4.9                | A                         | 4.5                |
|                                                                                            | NBL      | A                         | 1.5                | A                        | 4.2                | B                           | 10.1               | A                         | 8.8                |
|                                                                                            | NBTR     | B                         | 12.6               | A                        | 7.2                | B                           | 16.4               | B                         | 18.1               |
| Katona Drive                                                                               | EBL      | D                         | 53.7               | D                        | 49.8               | D                           | 55.0               | D                         | 54.9               |
|                                                                                            | EBTR     | B                         | 17.1               | B                        | 14.5               | B                           | 14.0               | B                         | 16.0               |
| Katona Drive Extension                                                                     | WBL      | C                         | 34.7               | C                        | 28.6               | C                           | 31.3               | C                         | 32.1               |
|                                                                                            | WBTR     | C                         | 27.6               | B                        | 19.7               | B                           | 16.4               | B                         | 15.1               |
| Traffic Signal - Black Rock Turnpike at Burroughs Road                                     |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                                    |          | C                         | 29.4               | B                        | 12.4               | B                           | 14.3               | B                         | 14.3               |
| Black Rock Turnpike                                                                        | SB       | A                         | 7.7                | A                        | 5.3                | A                           | 4.9                | A                         | 4.0                |
|                                                                                            | NBLT     | D                         | 36.0               | B                        | 11.3               | B                           | 14.0               | B                         | 14.3               |
|                                                                                            | NBR      | A                         | 4.0                | A                        | 1.6                | A                           | 2.1                | A                         | 1.6                |
| Burroughs Road                                                                             | EB       | C                         | 25.9               | C                        | 24.4               | C                           | 31.6               | C                         | 31.2               |
|                                                                                            | WB       | D                         | 54.2               | D                        | 41.6               | D                           | 53.8               | D                         | 54.9               |

**TABLE 9 (CONTINUED)**

2040 Concept B Conditions - Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh)

|                                                                             | Lane Use | Weekday Morning Peak Hour |                    | Weekday Midday Peak Hour |                    | Weekday Afternoon Peak Hour |                    | Saturday Midday Peak Hour |                    |
|-----------------------------------------------------------------------------|----------|---------------------------|--------------------|--------------------------|--------------------|-----------------------------|--------------------|---------------------------|--------------------|
|                                                                             |          | LOS                       | Avg. Delay (s/veh) | LOS                      | Avg. Delay (s/veh) | LOS                         | Avg. Delay (s/veh) | LOS                       | Avg. Delay (s/veh) |
| Unsignalized TWSC - Tunxis Hill Cutoff at Tunxis Hill Road                  |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                     |          | --                        | --                 | --                       | --                 | --                          | --                 | --                        | --                 |
| Tunxis Hill Road                                                            | EBL      | A                         | 0.0                | C                        | 22.3               | A                           | 0.0                | D                         | 26.9               |
|                                                                             | EBR      | A                         | 9.7                | B                        | 10.4               | B                           | 11.4               | B                         | 10.6               |
| Tunxis Hill Cutoff                                                          | NBL      | A                         | 8.2                | A                        | 8.7                | A                           | 9.2                | A                         | 8.8                |
| Unsignalized TWSC - Black Rock Turnpike at Judd Street                      |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                     |          | --                        | --                 | --                       | --                 | --                          | --                 | --                        | --                 |
| Black Rock Turnpike                                                         | NBL      | A                         | 8.6                | A                        | 9.0                | A                           | 9.0                | A                         | 9.2                |
| Judd Street                                                                 | EB       | C                         | 15.4               | C                        | 17.6               | C                           | 24.9               | C                         | 21.9               |
| Unsignalized TWSC - Black Rock Turnpike at Moritz Place                     |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                     |          | --                        | --                 | --                       | --                 | --                          | --                 | --                        | --                 |
| Moritz Place                                                                | EBR      | B                         | 14.2               | C                        | 16.4               | C                           | 20.5               | C                         | 19.0               |
| Roundabout - Black Rock Turnpike at Old Navy & Trader Joe's Plaza Driveways |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                     |          | A                         | 6.1                | A                        | 8.3                | B                           | 10.5               | B                         | 12.2               |
| Old Navy Plaza Driveway                                                     | EB       | A                         | 5.8                | B                        | 11.6               | C                           | 16.7               | C                         | 22.3               |
|                                                                             | SBLT     | A                         | 6.6                | A                        | 9.8                | B                           | 13.1               | B                         | 14.2               |
| Black Rock Turnpike                                                         | SBR      | A                         | 2.8                | A                        | 3.3                | A                           | 3.4                | A                         | 3.7                |
|                                                                             | NBLT     | A                         | 5.7                | A                        | 6.4                | A                           | 6.9                | A                         | 7.8                |
|                                                                             | NBTR     | A                         | 6.2                | A                        | 6.9                | A                           | 7.6                | A                         | 8.6                |
| Trader Joe's Plaza Dwy                                                      | WB       | A                         | 6.6                | A                        | 8.3                | A                           | 9.4                | B                         | 11.2               |
| Roundabout - Black Rock Turnpike at Tunxis Hill Cutoff & Whitewood Drive    |          |                           |                    |                          |                    |                             |                    |                           |                    |
| Overall                                                                     |          | B                         | 12.5               | B                        | 12.2               | C                           | 21.2               | C                         | 17.4               |
| Black Rock Turnpike                                                         | EBLR     | A                         | 7.9                | B                        | 11.2               | C                           | 21.6               | B                         | 14.4               |
|                                                                             | SBTR     | A                         | 8.7                | B                        | 13.3               | C                           | 24.2               | C                         | 19.1               |
| Tunxis Hill Cutoff                                                          | NBLT     | C                         | 19.2               | B                        | 11.2               | B                           | 12.7               | C                         | 17.5               |
| Whitewood Drive                                                             | WB       | A                         | 9.1                | A                        | 7.0                | A                           | 7.3                | A                         | 8.5                |



TABLE 10

2040 Concept B Conditions - Intersection Operation Summary - Vehicular 50<sup>th</sup> / 95<sup>th</sup> Percentile Queue (In Feet)

|                                                                                            | Lane Use | Available Storage | Weekday Morning Peak Hour |               | Weekday Midday Peak Hour |               | Weekday Afternoon Peak Hour |               | Saturday Midday Peak Hour |               |
|--------------------------------------------------------------------------------------------|----------|-------------------|---------------------------|---------------|--------------------------|---------------|-----------------------------|---------------|---------------------------|---------------|
|                                                                                            |          |                   | Avg. Queues               | Design Queues | Avg. Queues              | Design Queues | Avg. Queues                 | Design Queues | Avg. Queues               | Design Queues |
|                                                                                            |          |                   |                           |               |                          |               |                             |               |                           |               |
| Traffic Signal - Black Rock Turnpike at Old Black Rock Turnpike & Tahmore Drive            |          |                   |                           |               |                          |               |                             |               |                           |               |
| Old Black Rock Turnpike                                                                    | EB       | 1000              | 7                         | 20            | 0                        | 2             | 0                           | 8             | 5                         | 19            |
| Tahmore Drive                                                                              | WB       | 615               | 239                       | 323           | 46                       | 89            | 61                          | 123           | 113                       | 164           |
| Black Rock Turnpike                                                                        | NB       | 1000              | 232                       | 238           | 49                       | 17            | 374                         | 356           | 217                       | 401           |
|                                                                                            | SB       | 1000              | 357                       | 560           | 152                      | 308           | 988                         | 1196          | 383                       | 696           |
| Traffic Signal - Black Rock Turnpike at Samp Mortar Drive                                  |          |                   |                           |               |                          |               |                             |               |                           |               |
| Samp Mortar Drive                                                                          | EBL      | 1000              | 40                        | 74            | 63                       | 102           | 123                         | 187           | 93                        | 137           |
|                                                                                            | EBR      | 1000              | 0                         | 46            | 0                        | 48            | 111                         | 218           | 34                        | 87            |
| Black Rock Turnpike                                                                        | NBL      | 50                | 84                        | 86            | 18                       | 55            | 63                          | 124           | 15                        | 84            |
|                                                                                            | NBT      | 750               | 2                         | 34            | 48                       | 71            | 115                         | 122           | 56                        | 104           |
|                                                                                            | SBT      | 1000              | 212                       | 561           | 149                      | 208           | 691                         | 742           | 238                       | 789           |
|                                                                                            | SBR      | 50                | 34                        | 98            | 7                        | 17            | 17                          | 19            | 6                         | 28            |
| Traffic Signal - Black Rock Turnpike at Brookside Drive & Shell Driveway                   |          |                   |                           |               |                          |               |                             |               |                           |               |
| Brookside Drive                                                                            | EBL      | 50                | 31                        | 61            | 48                       | 89            | 98                          | 140           | 64                        | 105           |
|                                                                                            | EBLTR    | 900               | 17                        | 47            | 6                        | 44            | 25                          | 64            | 0                         | 10            |
| Shell Driveway                                                                             | WB       | 25                | 0                         | 0             | 0                        | 0             | 0                           | 0             | 4                         | 37            |
| Black Rock Turnpike                                                                        | NB       | 180               | 111                       | 130           | 55                       | 39            | 107                         | 76            | 117                       | 97            |
|                                                                                            | SB       | 300               | 11                        | 8             | 15                       | 51            | 186                         | 112           | 68                        | 67            |
| Traffic Signal - Black Rock Turnpike at Fairfield Woods Road & Commercial Driveway         |          |                   |                           |               |                          |               |                             |               |                           |               |
| Commercial Driveway                                                                        | EBLT     | 35                | 3                         | 10            | 13                       | 29            | 34                          | 70            | 38                        | 74            |
|                                                                                            | EBR      | 35                | 0                         | 0             | 0                        | 0             | 0                           | 11            | 0                         | 6             |
| Fairfield Woods Road                                                                       | WBLT     | 1000              | 26                        | 50            | 123                      | 160           | 69                          | 122           | 89                        | 130           |
|                                                                                            | WBR      | 1000              | 224                       | 302           | 47                       | 73            | 95                          | 137           | 106                       | 149           |
|                                                                                            | NBL      | 200               | 3                         | 14            | 9                        | 29            | 13                          | 37            | 9                         | 27            |
| Black Rock Turnpike                                                                        | NBTR     | 365               | 208                       | 313           | 133                      | 217           | 133                         | 210           | 142                       | 220           |
|                                                                                            | SBL      | 180               | 7                         | 16            | 6                        | 35            | 7                           | 108           | 1                         | 22            |
|                                                                                            | SBTR     | 180               | 44                        | 110           | 45                       | 194           | 40                          | 153           | 12                        | 119           |
| Traffic Signal - Black Rock Turnpike at Stillson Road                                      |          |                   |                           |               |                          |               |                             |               |                           |               |
| Black Rock Turnpike                                                                        | SBL      | 200               | 31                        | 68            | 44                       | 104           | 67                          | 122           | 68                        | 146           |
|                                                                                            | SBTR     | 500               | 159                       | 214           | 187                      | 256           | 345                         | 434           | 323                       | 408           |
|                                                                                            | NBL      | 200               | 116                       | 202           | 67                       | 146           | 108                         | 209           | 111                       | 216           |
|                                                                                            | NBTR     | 680               | 247                       | 303           | 156                      | 213           | 233                         | 300           | 280                       | 355           |
| Stillson Road                                                                              | EBL      | 400               | 67                        | 98            | 80                       | 136           | 133                         | 202           | 127                       | 215           |
|                                                                                            | EBT      | 1000              | 98                        | 142           | 101                      | 173           | 213                         | 334           | 153                       | 238           |
|                                                                                            | EBR      | 75                | 0                         | 0             | 0                        | 37            | 44                          | 111           | 29                        | 91            |
|                                                                                            | WBL      | 170               | 44                        | 71            | 67                       | 117           | 107                         | 161           | 135                       | 200           |
|                                                                                            | WBT      | 1000              | 236                       | 308           | 100                      | 187           | 209                         | 297           | 211                       | 304           |
|                                                                                            | WBR      | 75                | 25                        | 49            | 26                       | 59            | 30                          | 62            | 40                        | 78            |
| Traffic Signal - Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza Driveways |          |                   |                           |               |                          |               |                             |               |                           |               |
| Black Rock Turnpike                                                                        | SB       | 680               | 36                        | 56            | 92                       | 138           | 146                         | 207           | 143                       | 202           |
|                                                                                            | NB       | 405               | 30                        | 36            | 48                       | 108           | 48                          | 148           | 67                        | 111           |
| Turnpike Shopping Center Driveway                                                          | EBLT     | 25                | 38                        | 68            | 76                       | 135           | 112                         | 167           | 104                       | 174           |
|                                                                                            | EBR      | 25                | 0                         | 0             | 0                        | 5             | 3                           | 37            | 7                         | 49            |
| Fairway Plaza Driveway                                                                     | WBLT     | 25                | 18                        | 44            | 28                       | 59            | 28                          | 55            | 55                        | 90            |
|                                                                                            | WBR      | 25                | 0                         | 0             | 0                        | 0             | 0                           | 0             | 0                         | 0             |
| Traffic Signal - Black Rock Turnpike at Katona Drive & Katona Drive Extension              |          |                   |                           |               |                          |               |                             |               |                           |               |
| Black Rock Turnpike                                                                        | SB       | 405               | 36                        | 46            | 44                       | 61            | 86                          | 137           | 75                        | 121           |
|                                                                                            | NBL      | 175               | 3                         | 3             | 5                        | 7             | 8                           | 17            | 9                         | 17            |
|                                                                                            | NBTR     | 300               | 56                        | 58            | 68                       | 88            | 135                         | 233           | 157                       | 678           |
| Katona Drive                                                                               | EBL      | 75                | 46                        | 89            | 50                       | 91            | 71                          | 109           | 68                        | 118           |
|                                                                                            | EBTR     | 1000              | 3                         | 31            | 5                        | 35            | 8                           | 40            | 8                         | 43            |
| Katona Drive Extension                                                                     | WBL      | 135               | 2                         | 10            | 4                        | 14            | 4                           | 14            | 5                         | 18            |
|                                                                                            | WBTR     | 135               | 2                         | 11            | 5                        | 23            | 2                           | 18            | 1                         | 18            |
| Traffic Signal - Black Rock Turnpike at Burroughs Road                                     |          |                   |                           |               |                          |               |                             |               |                           |               |
| Black Rock Turnpike                                                                        | SB       | 275               | 46                        | 56            | 47                       | 64            | 108                         | 154           | 95                        | 20            |
|                                                                                            | NBLT     | 925               | 518                       | 847           | 170                      | 310           | 250                         | 475           | 298                       | 489           |
|                                                                                            | NBR      | 130               | 6                         | 24            | 0                        | 18            | 4                           | 29            | 2                         | 18            |
| Burroughs Road                                                                             | EB       | 1000              | 53                        | 83            | 37                       | 64            | 72                          | 116           | 49                        | 91            |
|                                                                                            | WB       | 1000              | 188                       | 247           | 106                      | 158           | 129                         | 199           | 131                       | 235           |

**TABLE 10 (CONTINUED)**

2040 Concept B Conditions - Intersection Operation Summary - Vehicular 95<sup>th</sup> Percentile Queue (In Feet)

|                                                                                        |                      |      | Weekday Morning<br>Peak Hour<br>Design<br>Queues | Weekday Midday<br>Peak Hour<br>Design<br>Queues | Weekday<br>Afternoon<br>Design<br>Queues | Saturday Midday<br>Peak Hour<br>Design<br>Queues |
|----------------------------------------------------------------------------------------|----------------------|------|--------------------------------------------------|-------------------------------------------------|------------------------------------------|--------------------------------------------------|
| Lane<br>Use                                                                            | Available<br>Storage |      |                                                  |                                                 |                                          |                                                  |
| <b>Unsignalized TWSC - Tunxis Hill Cutoff at Tunxis Hill Road</b>                      |                      |      |                                                  |                                                 |                                          |                                                  |
| Tunxis Hill Road                                                                       | EBL                  | 1000 | 0                                                | 0                                               | 0                                        | 3                                                |
|                                                                                        | EBR                  | 1000 | 8                                                | 8                                               | 13                                       | 8                                                |
| Tunxis Hill Cutoff                                                                     | NBL                  | 200  | 5                                                | 3                                               | 5                                        | 3                                                |
| <b>Unsignalized TWSC - Black Rock Turnpike at Judd Street</b>                          |                      |      |                                                  |                                                 |                                          |                                                  |
| Black Rock Turnpike                                                                    | NBL                  | 25   | 5                                                | 5                                               | 5                                        | 5                                                |
| Judd Street                                                                            | EB                   | 1000 | 23                                               | 25                                              | 60                                       | 40                                               |
| <b>Unsignalized TWSC - Black Rock Turnpike at Moritz Place</b>                         |                      |      |                                                  |                                                 |                                          |                                                  |
| Moritz Place                                                                           | EBR                  | 935  | 0                                                | 3                                               | 5                                        | 5                                                |
| <b>Roundabout - Black Rock Turnpike at Old Navy &amp; Trader Joe's Plaza Driveways</b> |                      |      |                                                  |                                                 |                                          |                                                  |
| Old Navy Plaza Driveway                                                                | EB                   | 65   | 8                                                | 45                                              | 78                                       | 125                                              |
|                                                                                        | SBLT                 | 365  | 53                                               | 108                                             | 188                                      | 213                                              |
| Black Rock Turnpike                                                                    | SBR                  | 50   | 3                                                | 5                                               | 5                                        | 8                                                |
|                                                                                        | NBLT                 | 500  | 35                                               | 40                                              | 48                                       | 58                                               |
|                                                                                        | NBTR                 | 500  | 43                                               | 48                                              | 58                                       | 73                                               |
| Trader Joe's Plaza Dwy                                                                 | WB                   | 125  | 8                                                | 28                                              | 38                                       | 53                                               |
| <b>Roundabout - Black Rock Turnpike at Tunxis Hill Cutoff &amp; Whitewood Drive</b>    |                      |      |                                                  |                                                 |                                          |                                                  |
| Black Rock Turnpike                                                                    | EBLR                 | 1000 | 48                                               | 78                                              | 173                                      | 115                                              |
|                                                                                        | SBTR                 | 925  | 80                                               | 165                                             | 348                                      | 260                                              |
| Tunxis Hill Cutoff                                                                     | NBLT                 | 1000 | 180                                              | 73                                              | 85                                       | 143                                              |
| Whitewood Drive                                                                        | WB                   | 785  | 5                                                | 3                                               | 0                                        | 3                                                |

**APPENDIX A**  
Overall Traffic Operations Summary Tables



**TABLE 1**  
Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh)

|                                                                                    |                   | Weekday Morning Peak Hour |                 |                |                |                | Weekday Midday Peak Hour |                 |                |                |                | Weekday Afternoon Peak Hour |                 |                |                |                | Saturday Midday Peak Hour |                 |                |                |                |
|------------------------------------------------------------------------------------|-------------------|---------------------------|-----------------|----------------|----------------|----------------|--------------------------|-----------------|----------------|----------------|----------------|-----------------------------|-----------------|----------------|----------------|----------------|---------------------------|-----------------|----------------|----------------|----------------|
|                                                                                    | Lane Use*         | 2017 Existing             | 2040 Background | 2040 Optimized | 2040 Concept A | 2040 Concept B | 2017 Existing            | 2040 Background | 2040 Optimized | 2040 Concept A | 2040 Concept B | 2017 Existing               | 2040 Background | 2040 Optimized | 2040 Concept A | 2040 Concept B | 2017 Existing             | 2040 Background | 2040 Optimized | 2040 Concept A | 2040 Concept B |
| Traffic Signal - Black Rock Turnpike at Old Black Rock Turnpike & Tahmore Drive    |                   |                           |                 |                |                |                |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Overall                                                                            |                   | C / 22.2                  | C / 26.6        | C / 21.2       | C / 27.7       | C / 25.1       | A / 8.1                  | A / 8.7         | A / 6.1        | A / 7.0        | A / 6.9        | C / 29.3                    | D / 43.6        | C / 29.6       | C / 34.3       | C / 33.5       | B / 16.3                  | B / 18.9        | B / 15.2       | B / 15.9       | B / 16.9       |
| Old Black Rock Turnpike                                                            | EB                | B / 17.1                  | B / 17.9        | B / 15.9       | C / 22.2       | C / 20.4       | A / 0.1                  | A / 0.1         | A / 0.4        | A / 4.0        | A / 4.0        | A / 1.0                     | A / 2.2         | A / 4.1        | A / 9.2        | A / 9.2        | B / 20.0                  | B / 19.9        | C / 29.8       | C / 26.6       | C / 32.3       |
| Tahmore Drive                                                                      | WB                | D / 44.5                  | E / 61.1        | D / 46.7       | D / 54.6       | D / 53.5       | B / 15.0                 | B / 15.5        | C / 26.8       | D / 41.9       | D / 41.9       | C / 20.2                    | C / 20.1        | D / 35.1       | D / 52.0       | D / 52.0       | C / 22.1                  | C / 24.7        | D / 50.4       | D / 43.3       | D / 53.6       |
| Black Rock Turnpike                                                                | NB                | B / 13.2                  | B / 13.4        | A / 7.0        | B / 15.4       | B / 12.2       | A / 6.7                  | A / 7.1         | A / 2.8        | A / 2.7        | A / 2.7        | A / 7.8                     | A / 9.1         | A / 2.7        | A / 8.7        | A / 6.7        | B / 10.9                  | B / 11.7        | A / 6.3        | A / 9.0        | A / 8.7        |
|                                                                                    | SB                | B / 18.5                  | B / 19.9        | C / 20.6       | C / 24.6       | C / 21.6       | A / 8.6                  | A / 9.4         | A / 6.5        | A / 6.3        | A / 6.3        | D / 47.4                    | E / 73.4        | D / 50.5       | D / 52.9       | D / 52.9       | B / 19.9                  | C / 24.3        | B / 15.1       | B / 16.1       | B / 15.9       |
| Traffic Signal - Black Rock Turnpike at Samp Mortar Drive                          |                   |                           |                 |                |                |                |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Overall                                                                            |                   | B / 16.7                  | B / 18.3        | B / 13.1       | B / 12.1       | B / 13.9       | B / 13.1                 | B / 13.7        | A / 8.5        | A / 9.4        | A / 9.5        | B / 16.4                    | B / 17.9        | B / 14.7       | C / 25.8       | C / 25.2       | B / 14.5                  | B / 15.2        | B / 10.2       | B / 15.1       | B / 14.8       |
| Samp Mortar Drive                                                                  | EBL               | C / 33.9                  | C / 34.2        | C / 31.1       | E / 62.9       | D / 50.0       | D / 35.9                 | D / 36.2        | D / 39.6       | E / 55.1       | D / 54.1       | D / 38.8                    | D / 38.3        | C / 32.4       | D / 40.7       | D / 40.7       | D / 37.7                  | D / 38.0        | D / 44.5       | D / 39.7       | D / 52.1       |
|                                                                                    | EBR               | B / 11.3                  | B / 11.3        | B / 10.5       | B / 17.1       | B / 14.8       | B / 10.8                 | B / 10.8        | B / 11.4       | B / 13.7       | B / 13.5       | A / 9.1                     | B / 10.1        | B / 12.3       | C / 25.7       | C / 25.7       | A / 9.6                   | A / 9.5         | B / 12.8       | A / 9.6        | B / 19.4       |
|                                                                                    | NBL               | A / 9.4                   | B / 10.5        | A / 8.3        | B / 15.3       | B / 11.9       | A / 6.9                  | A / 7.3         | A / 4.4        | A / 5.6        | A / 6.3        | A / 9.7                     | B / 10.6        | B / 12.3       | C / 30.4       | D / 37.6       | A / 7.8                   | A / 8.3         | A / 4.8        | B / 15.3       | B / 12.0       |
| Black Rock Turnpike                                                                | NBT               | B / 14.0                  | B / 14.7        | A / 8.5        | A / 3.5        | A / 1.8        | B / 14.5                 | B / 15.2        | A / 5.5        | A / 2.6        | A / 3.0        | B / 18.5                    | C / 20.7        | B / 15.1       | B / 10.0       | A / 7.0        | B / 16.7                  | B / 17.7        | A / 6.4        | A / 7.5        | A / 3.9        |
|                                                                                    | SBT <sup>1</sup>  | C / 22.3                  | C / 25.3        | B / 18.7       | B / 15.8       | C / 26.1       | B / 11.1                 | B / 11.9        | A / 7.7        | B / 10.7       | B / 10.5       | B / 14.1                    | B / 15.5        | B / 12.4       | D / 38.7       | D / 38.7       | B / 11.6                  | B / 12.4        | A / 8.5        | C / 20.5       | B / 18.5       |
|                                                                                    | SBR               | -- / --                   | -- / --         | -- / --        | A / 8.3        | B / 13.7       | -- / --                  | -- / --         | -- / --        | A / 5.3        | A / 5.2        | -- / --                     | -- / --         | -- / --        | A / 6.1        | A / 6.1        | -- / --                   | -- / --         | -- / --        | A / 4.5        | A / 8.6        |
| Traffic Signal - Black Rock Turnpike at Brookside Drive & Shell Driveway           |                   |                           |                 |                |                |                |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Overall                                                                            |                   | A / 2.9                   | A / 3.0         | A / 3.3        | A / 4.2        | A / 4.8        | A / 3.7                  | A / 3.8         | A / 4.9        | A / 4.2        | A / 4.7        | A / 8.0                     | A / 8.2         | A / 8.0        | A / 7.3        | A / 9.6        | A / 5.4                   | A / 5.6         | A / 6.0        | A / 4.7        | A / 6.8        |
| Brookside Drive                                                                    | EBL <sup>2</sup>  | -- / --                   | -- / --         | -- / --        | E / 58.8       | D / 46.9       | -- / --                  | -- / --         | -- / --        | D / 52.0       | D / 52.0       | -- / --                     | -- / --         | -- / --        | E / 59.4       | E / 59.4       | -- / --                   | -- / --         | -- / --        | D / 37.9       | D / 53.6       |
|                                                                                    | EBLTR             | C / 29.4                  | C / 29.4        | C / 27.8       | D / 41.8       | C / 33.6       | C / 24.7                 | C / 25.4        | C / 29.4       | B / 19.8       | B / 19.9       | C / 33.5                    | C / 34.0        | D / 38.4       | C / 22.1       | C / 22.1       | C / 28.7                  | C / 29.3        | D / 40.0       | A / 1.8        | A / 5.6        |
| Shell Driveway <sup>3</sup>                                                        | WB                | -- / --                   | -- / --         | -- / --        | A / 5.9        | A / 3.1        | -- / --                  | -- / --         | -- / --        | A / 1.6        | A / 1.6        | -- / --                     | -- / --         | -- / --        | A / 2.7        | A / 2.7        | -- / --                   | -- / --         | -- / --        | B / 16.4       | C / 21.7       |
| Black Rock Turnpike                                                                | NB                | A / 2.5                   | A / 2.6         | A / 3.0        | A / 2.5        | A / 5.1        | A / 2.9                  | A / 3.0         | A / 3.5        | A / 2.2        | A / 3.3        | A / 4.4                     | A / 4.6         | A / 4.4        | A / 2.3        | A / 5.3        | A / 3.6                   | A / 3.8         | A / 3.7        | A / 2.0        | A / 5.5        |
|                                                                                    | SB                | A / 0.6                   | A / 0.6         | A / 1.0        | A / 1.5        | A / 0.8        | A / 1.6                  | A / 1.4         | A / 2.8        | A / 1.5        | A / 1.5        | A / 5.4                     | A / 5.5         | A / 4.4        | A / 3.9        | A / 6.3        | A / 3.3                   | A / 3.4         | A / 2.6        | A / 3.9        | A / 3.5        |
| Traffic Signal - Black Rock Turnpike at Fairfield Woods Road & Commercial Driveway |                   |                           |                 |                |                |                |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Overall                                                                            |                   | B / 15.7                  | B / 16.7        | B / 14.6       | C / 22.7       | C / 20.9       | A / 9.1                  | A / 9.5         | B / 10.0       | B / 18.1       | B / 14.6       | B / 11.0                    | B / 13.1        | B / 13.0       | B / 14.9       | B / 14.2       | A / 9.6                   | B / 10.3        | B / 11.1       | B / 12.8       | B / 14.7       |
| Commercial Driveway <sup>4</sup>                                                   | EBLT              | B / 19.8                  | B / 19.8        | B / 16.2       | -- / --        | C / 21.2       | C / 24.3                 | C / 23.9        | C / 25.9       | -- / --        | C / 33.0       | C / 29.7                    | C / 29.5        | D / 36.6       | -- / --        | D / 46.0       | C / 28.5                  | C / 28.3        | D / 35.8       | -- / --        | D / 44.4       |
|                                                                                    | EBR               | A / 0.0                   | A / 0.0         | A / 0.0        | -- / --        | A / 0.0        | A / 0.5                  | A / 0.5         | A / 0.6        | -- / --        | A / 0.6        | A / 1.0                     | A / 1.0         | A / 1.4        | -- / --        | A / 3.8        | A / 0.7                   | A / 0.7         | A / 0.9        | -- / --        | A / 2.4        |
|                                                                                    | WBL <sup>5</sup>  | -- / --                   | -- / --         | -- / --        | C / 28.6       | -- / --        | -- / --                  | -- / --         | -- / --        | D / 39.5       | -- / --        | -- / --                     | -- / --         | -- / --        | D / 49.5       | -- / --        | -- / --                   | -- / --         | -- / --        | D / 36.8       | -- / --        |
| Fairfield Woods Road                                                               | WBLT <sup>5</sup> | C / 21.6                  | C / 21.6        | B / 18.0       | -- / --        | C / 24.0       | C / 29.5                 | C / 29.3        | C / 31.8       | -- / --        | E / 60.9       | D / 36.5                    | D / 36.7        | D / 52.6       | -- / --        | E / 59.5       | D / 38.6                  | D / 39.0        | D / 50.1       | -- / --        | E / 61.7       |
|                                                                                    | WBR               | D / 53.7                  | E / 58.2        | D / 43.4       | E / 57.9       | D / 50.1       | D / 39.5                 | D / 39.7        | D / 43.3       | E / 58.9       | D / 37.4       | D / 38.5                    | D / 38.8        | E / 59.3       | E / 62.9       | E / 65.7       | D / 38.9                  | D / 39.1        | D / 50.6       | D / 46.7       | E / 62.6       |
|                                                                                    | NBL               | -- / --                   | -- / --         | -- / --        | -- / --        | B / 17.5       | -- / --                  | -- / --         | -- / --        | -- / --        | B / 11.5       | -- / --                     | -- / --         | -- / --        | -- / --        | B / 10.7       | -- / --                   | -- / --         | -- / --        | -- / --        | A / 9.6        |
| Black Rock Turnpike                                                                | NBTR <sup>6</sup> | A / 8.8                   | A / 9.3         | B / 10.5       | C / 20.4       | C / 20.1       | A / 5.7                  | A / 6.1         | A / 5.9        | A / 9.8        | B / 11.4       | A / 5.1                     | A / 5.6         | A / 3.9        | B / 13.6       | B / 10.2       | A / 5.7                   | A / 6.2         | A / 5.6        | B / 12.0       | A / 9.9        |
|                                                                                    | SBL <sup>7</sup>  | -- / --                   | -- / --         | -- / --        | A / 6.1        | A / 5.4        | -- / --                  | -- / --         | -- / --        | A / 2.3        | A / 5.3        | -- / --                     | -- / --         | -- / --        | B / 11.2       | B / 10.7       | -- / --                   | -- / --         | -- / --        | A / 2.0        | A / 3.3        |
|                                                                                    | SBT <sup>8</sup>  | A / 3.2                   | A / 3.2         | A / 3.8        | A / 5.5        | A / 5.6        | A / 4.1                  | A / 4.6         | A / 4.9        | A / 1.2        | A / 5.8        | A / 9.8                     | B / 13.6        | B / 10.5       | A / 6.7        | A / 5.7        | A / 4.3                   | A / 5.3         | A / 4.2        | A / 5.6        | A / 4.8        |
| Traffic Signal - Black Rock Turnpike at Stillson Road                              |                   |                           |                 |                |                |                |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Overall                                                                            |                   | D / 44.5                  | D / 49.7        | D / 44.0       | D / 36.7       | D / 36.7       | D / 37.7                 | D / 40.4        | D / 39.3       | C / 29.6       | C / 29.4       | D / 53.9                    | E / 61.5        | E / 55.5       | D / 42.9       | D / 41.7       | D / 48.5                  | D / 53.8        | D / 49.7       | D / 40.7       | D / 40.6       |
| Black Rock Turnpike                                                                | SBL               | E / 60.0                  | E / 61.3        | F / 89.4       | D / 52.1       | D / 52.1       | E / 61.1                 | E / 65.5        | E / 62.7       | D / 53.5       | D / 53.5       | E / 68.3                    | E / 69.6        | E / 74.1       | E / 64.2       | E / 64.2       | E / 69.5                  | E / 69.6        | F / 83.5       | E / 73.1       | E / 73.1       |
|                                                                                    | SBTR              | D / 37.5                  | D / 38.6        | D / 50.2       | D / 40.5       | D / 40.5       | D / 38.2                 | D / 41.3        | D / 41.2       | C / 27.9       | C / 27.9       | E / 56.2                    | E / 72.6        | D / 50.3       | D / 41.4       | D / 41.4       | D / 51.9                  | E / 59.1        | D / 47.3       | D / 41.2       | D / 41.2       |
|                                                                                    | NBL               | F / 99.0                  | F / 117.4       | E / 68.8       | D / 54.1       | D / 54.1       | E / 62.4                 | E / 68.9        | E / 66.1       | D / 52.3       | D / 52.3       | E / 75.1                    | F / 83.4        | F / 117.2      | E / 71.2       | E / 71.2       | E / 79.6                  | F / 85.8        | F / 98.6       | E / 72.6       | E / 72.6       |
|                                                                                    | NBTR              | D / 37.6                  | D / 39.8        | D / 41.2       | C / 33.3       | C / 33.3       | C / 31.2                 | C / 34.9        | C / 33.8       | C / 22.9       | C / 22.9       | D / 36.8                    | D / 39.7        | C / 34.8       | C / 30.0       | C / 30.0       | D / 41.3                  | D / 44.3        | D / 37.0       | C / 32.5       | C / 32.5       |
|                                                                                    | EBL               | C / 25.7                  | C / 31.9        | C / 27.0       | C / 33.5       | C / 33.4       | C / 23.9                 | C / 24.8        | C / 24.5       | C / 26.5       | C / 26.5       | C / 28.4                    | C / 29.8        | C / 34.0       | D / 44.1       | D / 48.1       | C / 27.9                  | C / 31.0        | D / 39.1       | D / 39.5       | D / 39.5       |
| Stillson Road                                                                      | EBT <sup>9</sup>  | C / 32.3                  | C / 33.5        | C / 30.1       | C / 30.2       | C / 30.2       | D / 46.1                 | D / 48.3        | D / 45.6       | D / 42.1       | D / 39.7       | F / 86.1                    | F / 94.7        | F / 84.5       | E / 58.6       | D / 54.9       | E / 60.5                  | E / 68.0        | E / 66.8       | D / 49.0       | D / 49.0       |
|                                                                                    | EBR               | -- / --                   | -- / --         | -- / --        | A / 0.5        | A / 0.5        | -- / --                  | -- / --         | -- / --        | A / 6.5        | A / 6.3        | -- / --                     | -- / --         | -- / --        | B / 18.5       | B / 17.9       | -- / --                   | -- / --         | -- / --        | B / 15.6       | B / 15.6       |
|                                                                                    | WBL               | B / 18.9                  | B / 19.3        | B / 17.5       | B / 17.3       | B / 17.2       | C / 24.5                 | C / 25.5        | C / 25.3       | C / 25.2       | C / 25.0       | D / 38.8                    | D / 41.4        | E / 63.7       | D / 36.6       | D / 35.2       | C / 29.8                  | D / 36.0        | D / 43.7       | C / 32.5       | C / 31.0       |
|                                                                                    | WBT <sup>10</sup> | E / 61.4                  | E / 75.1        | D / 47.4       | D / 46.6       | D / 46.6       | D / 43.1                 | D / 43.2        | D / 41.3       | D / 45.4       | D / 45.4       | D / 53.7                    | D / 54.4        | D / 53.3       | E / 64.1       | D / 52.3       | D / 53.8                  | E / 58.7        | D / 50.6       | D / 54.2       | D / 54.2       |
|                                                                                    | WBR               | -- / --                   | -- / --         | -- / --        | C / 25.5       | C / 25.5       | -- / --                  | -- / --         | -- / --        | C / 32.5       | C / 32.5       | -- / --                     | -- / --         | -- / --        | D / 38.9       | D / 36.2       | -- / --                   | -- / --         | -- / --        | D / 36.9       | D / 36.9       |

\*Lane uses shown reflect conditions in Concept A

<sup>1</sup>SBTR in Existing Conditions

<sup>2</sup>EBL only present in Concepts A and B

<sup>3</sup>Shell Driveway unsignalized in Existing Conditions; Signalized and analyzed in Concepts A and B only

<sup>4</sup>Commercial Driveway relocated south to unsignalized location in Concept A and not analyzed

<sup>5</sup>WBLT in Existing Conditions and Concept B; WBL in Concept A due to relocation of commercial driveway

<sup>6</sup>NBLT and NBTR in Existing Conditions

<sup>7</sup>SBLT in Existing Conditions

<sup>8</sup>SBTR in Existing Conditions and Concept B; SBT in Concept A due to relocation of commercial driveway

<sup>9</sup>EBTR in Existing Conditions

<sup>10</sup>WBTR in Existing Conditions

TABLE 1 (CONTINUED)  
Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh)

|                                                                                                          |                    | Weekday Morning Peak Hour |                 |                |                |                | Weekday Midday Peak Hour |                 |                |                |                | Weekday Afternoon Peak Hour |                 |                |                |                | Saturday Midday Peak Hour |                 |                |                |                |
|----------------------------------------------------------------------------------------------------------|--------------------|---------------------------|-----------------|----------------|----------------|----------------|--------------------------|-----------------|----------------|----------------|----------------|-----------------------------|-----------------|----------------|----------------|----------------|---------------------------|-----------------|----------------|----------------|----------------|
|                                                                                                          | Lane Use*          | 2017 Existing             | 2040 Background | 2040 Optimized | 2040 Concept A | 2040 Concept B | 2017 Existing            | 2040 Background | 2040 Optimized | 2040 Concept A | 2040 Concept B | 2017 Existing               | 2040 Background | 2040 Optimized | 2040 Concept A | 2040 Concept B | 2017 Existing             | 2040 Background | 2040 Optimized | 2040 Concept A | 2040 Concept B |
| Traffic Signal - Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza Driveways <sup>11</sup> |                    |                           |                 |                |                |                |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Overall                                                                                                  |                    | A / 6.6                   | A / 7.1         | A / 4.3        | -- / --        | A / 5.0        | B / 10.4                 | B / 11.1        | B / 10.2       | -- / --        | B / 11.2       | B / 12.8                    | B / 15.8        | B / 18.1       | -- / --        | B / 13.5       | B / 14.3                  | C / 23.5        | B / 15.4       | -- / --        | B / 15.9       |
| Black Rock Turnpike                                                                                      | SB                 | A / 3.0                   | A / 3.2         | A / 3.3        | -- / --        | A / 2.9        | A / 7.7                  | A / 8.9         | A / 8.1        | -- / --        | A / 8.9        | B / 11.3                    | B / 14.1        | B / 15.4       | -- / --        | B / 12.0       | B / 13.2                  | C / 20.8        | B / 14.6       | -- / --        | B / 14.6       |
|                                                                                                          | NB                 | A / 6.1                   | A / 6.8         | A / 2.2        | -- / --        | A / 2.5        | A / 7.9                  | A / 8.7         | A / 5.4        | -- / --        | A / 9.1        | B / 11.6                    | B / 16.6        | C / 21.6       | -- / --        | A / 9.6        | B / 13.7                  | C / 30.3        | B / 12.1       | -- / --        | B / 13.5       |
| Turnpike Shopping Center Driveway                                                                        | EBLT               | D / 38.5                  | D / 38.9        | D / 35.4       | -- / --        | D / 48.3       | C / 34.1                 | C / 32.3        | D / 38.2       | -- / --        | C / 32.3       | C / 30.2                    | C / 28.8        | C / 27.5       | -- / --        | D / 38.7       | C / 27.8                  | C / 24.5        | D / 35.3       | -- / --        | D / 35.3       |
|                                                                                                          | EBR                | A / 0.4                   | A / 0.5         | A / 0.4        | -- / --        | A / 0.6        | A / 0.9                  | A / 1.2         | A / 1.8        | -- / --        | A / 1.2        | A / 3.7                     | A / 4.0         | A / 3.9        | -- / --        | A / 6.8        | A / 3.9                   | A / 3.9         | A / 7.1        | -- / --        | A / 7.1        |
| Fairway Plaza Driveway                                                                                   | WBLT               | C / 32.5                  | C / 32.4        | C / 29.8       | -- / --        | D / 40.0       | C / 25.1                 | C / 24.2        | C / 27.2       | -- / --        | C / 24.2       | C / 22.2                    | C / 21.4        | C / 21.1       | -- / --        | C / 27.5       | C / 23.2                  | C / 20.7        | C / 29.5       | -- / --        | C / 29.5       |
|                                                                                                          | WBR                | A / 0.2                   | A / 0.2         | A / 0.2        | -- / --        | A / 0.3        | A / 0.3                  | A / 0.3         | A / 0.3        | -- / --        | A / 0.3        | A / 0.2                     | A / 0.2         | A / 0.2        | -- / --        | A / 0.3        | A / 0.3                   | A / 0.2         | A / 0.3        | -- / --        | A / 0.3        |
| Traffic Signal - Black Rock Turnpike at Katona Drive & Katona Drive Extension <sup>12</sup>              |                    |                           |                 |                |                |                |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Overall                                                                                                  |                    | A / 6.7                   | A / 6.9         | A / 5.6        | -- / --        | B / 10.9       | A / 7.2                  | A / 7.4         | A / 8.0        | -- / --        | A / 8.1        | A / 7.5                     | A / 7.8         | A / 6.4        | -- / --        | B / 12.4       | A / 7.8                   | A / 8.5         | A / 8.8        | -- / --        | B / 13.0       |
| Black Rock Turnpike                                                                                      | SB                 | A / 2.3                   | A / 2.3         | A / 3.3        | -- / --        | A / 2.7        | A / 3.0                  | A / 3.1         | A / 4.0        | -- / --        | A / 3.1        | A / 3.4                     | A / 3.6         | A / 2.4        | -- / --        | A / 4.9        | A / 3.5                   | A / 4.3         | A / 4.4        | -- / --        | A / 4.5        |
|                                                                                                          | NBL                | -- / --                   | -- / --         | -- / --        | -- / --        | A / 1.5        | -- / --                  | -- / --         | -- / --        | -- / --        | A / 4.2        | -- / --                     | -- / --         | -- / --        | -- / --        | B / 10.1       | -- / --                   | -- / --         | -- / --        | -- / --        | A / 8.8        |
|                                                                                                          | NBTR <sup>13</sup> | A / 6.6                   | A / 6.8         | A / 4.3        | -- / --        | B / 12.6       | A / 6.6                  | A / 6.8         | A / 6.9        | -- / --        | A / 7.2        | A / 7.0                     | A / 7.1         | A / 5.7        | -- / --        | B / 16.4       | A / 8.1                   | A / 8.5         | A / 7.8        | -- / --        | B / 18.1       |
| Katona Drive                                                                                             | EBL                | -- / --                   | -- / --         | -- / --        | -- / --        | D / 53.7       | -- / --                  | -- / --         | -- / --        | -- / --        | D / 49.8       | -- / --                     | -- / --         | -- / --        | -- / --        | D / 55.0       | -- / --                   | -- / --         | -- / --        | -- / --        | D / 54.9       |
|                                                                                                          | EBTR <sup>14</sup> | D / 42.9                  | D / 43.3        | D / 40.6       | -- / --        | B / 17.1       | D / 45.7                 | D / 46.8        | D / 48.8       | -- / --        | B / 14.5       | D / 48.2                    | D / 49.6        | D / 46.5       | -- / --        | B / 14.0       | D / 47.0                  | D / 48.2        | E / 57.0       | -- / --        | B / 16.0       |
|                                                                                                          | EBR                | A / 0.9                   | A / 0.9         | A / 0.8        | -- / --        | -- / --        | A / 2.5                  | A / 3.0         | A / 3.5        | -- / --        | -- / --        | A / 4.7                     | A / 5.3         | A / 5.0        | -- / --        | -- / --        | A / 1.3                   | A / 1.8         | A / 3.5        | -- / --        | -- / --        |
| Katona Drive Extension                                                                                   | WBL                | C / 27.0                  | C / 26.5        | C / 25.0       | -- / --        | C / 34.7       | C / 25.7                 | C / 25.3        | C / 26.7       | -- / --        | C / 28.6       | C / 25.0                    | C / 25.0        | C / 24.0       | -- / --        | C / 31.3       | C / 25.0                  | C / 25.0        | C / 30.0       | -- / --        | C / 32.1       |
|                                                                                                          | WBTR               | C / 24.7                  | C / 24.3        | C / 23.0       | -- / --        | C / 27.6       | B / 19.4                 | B / 19.5        | C / 20.4       | -- / --        | B / 19.7       | B / 16.3                    | B / 15.6        | B / 14.9       | -- / --        | B / 16.4       | B / 15.1                  | B / 14.9        | B / 17.0       | -- / --        | B / 15.1       |
| Traffic Signal - Black Rock Turnpike at Burroughs Road                                                   |                    |                           |                 |                |                |                |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Overall                                                                                                  |                    | B / 14.8                  | B / 15.7        | B / 14.5       | B / 20.0       | C / 29.4       | B / 10.3                 | B / 10.8        | B / 11.0       | A / 9.6        | B / 12.4       | B / 10.8                    | B / 11.8        | B / 10.8       | A / 9.8        | B / 14.3       | B / 10.4                  | B / 11.4        | B / 11.1       | A / 9.9        | B / 14.3       |
| Black Rock Turnpike                                                                                      | SBL                | -- / --                   | -- / --         | -- / --        | A / 9.6        | -- / --        | -- / --                  | -- / --         | -- / --        | A / 7.2        | -- / --        | -- / --                     | -- / --         | -- / --        | A / 8.3        | -- / --        | -- / --                   | -- / --         | -- / --        | A / 9.2        | -- / --        |
|                                                                                                          | SBTR <sup>15</sup> | A / 5.7                   | A / 6.2         | A / 6.7        | A / 5.0        | A / 7.7        | A / 5.0                  | A / 5.4         | A / 4.8        | A / 6.5        | A / 5.3        | A / 5.2                     | A / 6.6         | A / 5.6        | A / 6.1        | A / 4.9        | A / 5.5                   | A / 7.1         | A / 3.5        | A / 5.3        | A / 4.0        |
|                                                                                                          | NBT <sup>16</sup>  | B / 11.6                  | B / 12.6        | B / 10.9       | C / 23.6       | D / 36.0       | A / 7.3                  | A / 7.9         | A / 7.4        | B / 10.4       | B / 11.3       | A / 7.6                     | A / 8.3         | A / 6.2        | B / 10.8       | B / 14.0       | A / 7.9                   | A / 8.6         | A / 7.7        | B / 11.7       | B / 14.3       |
|                                                                                                          | NBR                | -- / --                   | -- / --         | -- / --        | A / 1.4        | A / 4.0        | -- / --                  | -- / --         | -- / --        | A / 1.5        | A / 1.6        | -- / --                     | -- / --         | -- / --        | A / 1.2        | A / 2.1        | -- / --                   | -- / --         | -- / --        | A / 1.2        | A / 1.6        |
| Burroughs Road                                                                                           | EB                 | C / 20.5                  | C / 20.4        | B / 18.9       | C / 28.2       | C / 25.9       | C / 22.2                 | C / 22.3        | C / 24.7       | B / 17.2       | C / 24.4       | C / 26.2                    | C / 25.7        | C / 26.3       | C / 22.3       | C / 31.6       | C / 23.2                  | C / 23.0        | C / 29.5       | C / 22.4       | C / 31.2       |
|                                                                                                          | WBL                | -- / --                   | -- / --         | -- / --        | D / 49.3       | -- / --        | -- / --                  | -- / --         | -- / --        | C / 25.7       | -- / --        | -- / --                     | -- / --         | -- / --        | C / 26.5       | -- / --        | -- / --                   | -- / --         | -- / --        | C / 26.2       | -- / --        |
|                                                                                                          | WBTR <sup>17</sup> | D / 37.7                  | D / 39.1        | D / 36.6       | C / 22.7       | D / 54.2       | C / 34.8                 | D / 35.5        | D / 40.0       | B / 11.8       | D / 41.6       | D / 38.5                    | D / 39.5        | D / 42.4       | B / 13.3       | D / 53.8       | C / 34.3                  | D / 35.1        | D / 48.2       | B / 13.7       | D / 54.9       |
| Traffic Signal - Black Rock Turnpike at Tunxis Hill Cutoff, Moritz Place & Whitewood Drive <sup>18</sup> |                    |                           |                 |                |                |                |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Overall                                                                                                  |                    | B / 13.2                  | B / 13.8        | B / 12.0       | -- / --        | -- / --        | B / 11.8                 | B / 12.2        | B / 11.4       | -- / --        | -- / --        | B / 14.5                    | B / 15.2        | B / 13.9       | -- / --        | -- / --        | B / 13.9                  | B / 16.2        | B / 15.8       | -- / --        | -- / --        |
| Black Rock Turnpike                                                                                      | SBLT               | B / 15.3                  | B / 15.7        | A / 7.9        | -- / --        | -- / --        | B / 17.7                 | B / 18.1        | A / 6.7        | -- / --        | -- / --        | C / 21.9                    | C / 23.0        | B / 10.6       | -- / --        | -- / --        | B / 18.8                  | C / 21.6        | A / 9.6        | -- / --        | -- / --        |
|                                                                                                          | SBR                | A / 3.2                   | A / 3.1         | A / 2.7        | -- / --        | -- / --        | A / 3.5                  | A / 3.5         | A / 1.7        | -- / --        | -- / --        | A / 3.1                     | A / 3.2         | A / 2.8        | -- / --        | -- / --        | A / 3.5                   | A / 4.6         | A / 4.4        | -- / --        | -- / --        |
| Tunxis Hill Cutoff                                                                                       | NB                 | B / 16.8                  | B / 17.4        | B / 12.1       | -- / --        | -- / --        | B / 13.9                 | B / 14.2        | A / 10.0       | -- / --        | -- / --        | B / 14.1                    | B / 14.7        | B / 11.0       | -- / --        | -- / --        | B / 16.7                  | B / 19.7        | B / 13.9       | -- / --        | -- / --        |
| Black Rock Turnpike                                                                                      | NWB                | B / 15.3                  | B / 16.2        | C / 22.5       | -- / --        | -- / --        | B / 13.8                 | B / 14.7        | C / 26.7       | -- / --        | -- / --        | B / 18.4                    | B / 19.6        | C / 29.8       | -- / --        | -- / --        | B / 16.9                  | B / 19.6        | C / 33.6       | -- / --        | -- / --        |
| Moritz Place                                                                                             | NEB                | C / 25.5                  | C / 27.5        | C / 30.5       | -- / --        | -- / --        | C / 24.3                 | C / 25.4        | D / 36.6       | -- / --        | -- / --        | C / 29.8                    | C / 30.8        | D / 35.2       | -- / --        | -- / --        | C / 28.1                  | C / 31.4        | D / 42.9       | -- / --        | -- / --        |
| Whitewood Drive                                                                                          | SWB                | C / 26.0                  | C / 27.6        | C / 33.8       | -- / --        | -- / --        | C / 24.5                 | C / 25.6        | D / 37.3       | -- / --        | -- / --        | C / 29.7                    | C / 30.5        | C / 34.0       | -- / --        | -- / --        | C / 28.4                  | C / 31.5        | D / 45.5       | -- / --        | -- / --        |

\*Lane uses shown reflect conditions in Concept A

<sup>11</sup>Intersection unsignalized TWSC in Concept A

<sup>12</sup>Intersection is a roundabout in Concept A

<sup>13</sup>NBLT and NBTR in Existing Conditions

<sup>14</sup>EBLT Existing Conditions

<sup>15</sup>SBLT & SBTR in Existing Conditions and Concept B

<sup>16</sup>NBLT and NBTR in Existing Conditions; NBLT in Concept B

<sup>17</sup>WBLTR in Existing Conditions and Concept B

<sup>18</sup>Intersection is a roundabout with unsignalized TWSC on realigned Moritz Place in Concepts A and B

TABLE 1 (CONTINUED)  
Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh)

|                                                                                                             |           | Weekday Morning Peak Hour |                 |                |                |                | Weekday Midday Peak Hour |                 |                |                |                | Weekday Afternoon Peak Hour |                 |                |                |                | Saturday Midday Peak Hour |                 |                |                |                |
|-------------------------------------------------------------------------------------------------------------|-----------|---------------------------|-----------------|----------------|----------------|----------------|--------------------------|-----------------|----------------|----------------|----------------|-----------------------------|-----------------|----------------|----------------|----------------|---------------------------|-----------------|----------------|----------------|----------------|
|                                                                                                             | Lane Use* | 2017 Existing             | 2040 Background | 2040 Optimized | 2040 Concept A | 2040 Concept B | 2017 Existing            | 2040 Background | 2040 Optimized | 2040 Concept A | 2040 Concept B | 2017 Existing               | 2040 Background | 2040 Optimized | 2040 Concept A | 2040 Concept B | 2017 Existing             | 2040 Background | 2040 Optimized | 2040 Concept A | 2040 Concept B |
| Unsignalized TWSC - Tunxis Hill Cutoff at Tunxis Hill Road                                                  |           |                           |                 |                |                |                |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Tunxis Hill Road                                                                                            | EBL       | A / 0.0                   | A / 0.0         | A / 0.0        | A / 0.0        | A / 0.0        | C / 20.7                 | C / 22.3        | C / 22.3       | C / 22.3       | C / 22.3       | A / 0.0                     | A / 0.0         | A / 0.0        | A / 0.0        | A / 0.0        | C / 24.5                  | D / 26.9        | D / 26.9       | D / 26.9       | D / 26.9       |
|                                                                                                             | EBR       | A / 9.6                   | A / 9.7         | A / 9.7        | A / 9.7        | A / 9.7        | B / 10.3                 | B / 10.4        | B / 10.4       | B / 10.4       | B / 10.4       | B / 11.1                    | B / 11.4        | B / 11.4       | B / 11.4       | B / 11.4       | B / 10.4                  | B / 10.6        | B / 10.6       | B / 10.6       | B / 10.6       |
| Tunxis Hill Cutoff                                                                                          | NBL       | A / 8.1                   | A / 8.2         | A / 8.2        | A / 8.2        | A / 8.2        | A / 8.5                  | A / 8.7         | A / 8.7        | A / 8.7        | A / 8.7        | A / 9.0                     | A / 9.2         | A / 9.2        | A / 9.2        | A / 9.2        | A / 8.6                   | A / 8.8         | A / 8.8        | A / 8.8        | A / 8.8        |
| Unsignalized TWSC - Black Rock Turnpike at Judd Street                                                      |           |                           |                 |                |                |                |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Black Rock Turnpike                                                                                         | NBL       | A / 8.5                   | A / 8.6         | A / 8.6        | A / 8.6        | A / 8.6        | A / 8.8                  | A / 8.9         | A / 8.9        | A / 9.0        | A / 9.0        | A / 8.8                     | A / 9.0         | A / 9.0        | A / 9.0        | A / 9.0        | A / 9.0                   | A / 9.2         | A / 9.2        | A / 9.2        | A / 9.2        |
| Judd Street                                                                                                 | EB        | B / 13.8                  | B / 14.4        | B / 14.4       | C / 15.4       | C / 15.4       | C / 15.2                 | C / 16.0        | C / 16.0       | C / 17.6       | C / 17.6       | C / 18.6                    | C / 20.6        | C / 20.6       | C / 24.9       | C / 24.9       | C / 17.6                  | C / 19.1        | C / 19.1       | C / 21.9       | C / 21.9       |
| Unsignalized TWSC - Black Rock Turnpike at Moritz Place <sup>19</sup>                                       |           |                           |                 |                |                |                |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Moritz Place                                                                                                | EBR       | -- / --                   | -- / --         | -- / --        | B / 14.2       | B / 14.2       | -- / --                  | -- / --         | -- / --        | C / 16.4       | C / 16.4       | -- / --                     | -- / --         | -- / --        | C / 20.5       | C / 20.5       | -- / --                   | -- / --         | -- / --        | C / 19.0       | C / 19.0       |
| Unsignalized TWSC - Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza Driveways <sup>20</sup> |           |                           |                 |                |                |                |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Turnpike Shopping Dwy                                                                                       | EBR       | -- / --                   | -- / --         | -- / --        | B / 11.1       | -- / --        | -- / --                  | -- / --         | -- / --        | C / 16.2       | -- / --        | -- / --                     | -- / --         | -- / --        | D / 26.6       | -- / --        | -- / --                   | -- / --         | -- / --        | C / 23.4       | -- / --        |
| Black Rock Turnpike                                                                                         | SBL       | -- / --                   | -- / --         | -- / --        | B / 11.2       | -- / --        | -- / --                  | -- / --         | -- / --        | B / 10.5       | -- / --        | -- / --                     | -- / --         | -- / --        | B / 11.3       | -- / --        | -- / --                   | -- / --         | -- / --        | B / 12.1       | -- / --        |
|                                                                                                             | NBL       | -- / --                   | -- / --         | -- / --        | A / 8.9        | -- / --        | -- / --                  | -- / --         | -- / --        | A / 10.0       | -- / --        | -- / --                     | -- / --         | -- / --        | B / 11.1       | -- / --        | -- / --                   | -- / --         | -- / --        | B / 10.7       | -- / --        |
| Fairway Plaza Driveway                                                                                      | WBR       | -- / --                   | -- / --         | -- / --        | C / 19.9       | -- / --        | -- / --                  | -- / --         | -- / --        | C / 16.7       | -- / --        | -- / --                     | -- / --         | -- / --        | C / 19.7       | -- / --        | -- / --                   | -- / --         | -- / --        | C / 22.1       | -- / --        |
| Roundabout - Black Rock Turnpike at Old Navy & Trader Joe's Plaza Driveways <sup>21</sup>                   |           |                           |                 |                |                |                |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Overall                                                                                                     |           | -- / --                   | -- / --         | -- / --        | A / 6.2        | A / 6.1        | -- / --                  | -- / --         | -- / --        | A / 8.6        | A / 8.3        | -- / --                     | -- / --         | -- / --        | B / 11.6       | B / 10.5       | -- / --                   | -- / --         | -- / --        | B / 13.8       | B / 12.2       |
| Old Navy Plaza Driveway                                                                                     | EB        | -- / --                   | -- / --         | -- / --        | A / 5.9        | A / 5.8        | -- / --                  | -- / --         | -- / --        | B / 11.9       | B / 11.6       | -- / --                     | -- / --         | -- / --        | C / 18.3       | C / 16.7       | -- / --                   | -- / --         | -- / --        | D / 25.7       | C / 22.3       |
|                                                                                                             | SBLT      | -- / --                   | -- / --         | -- / --        | A / 6.6        | A / 6.6        | -- / --                  | -- / --         | -- / --        | B / 10.1       | A / 9.8        | -- / --                     | -- / --         | -- / --        | B / 14.6       | B / 13.1       | -- / --                   | -- / --         | -- / --        | C / 16.4       | B / 14.2       |
| Black Rock Turnpike                                                                                         | SBR       | -- / --                   | -- / --         | -- / --        | A / 2.8        | A / 2.8        | -- / --                  | -- / --         | -- / --        | A / 3.3        | A / 3.3        | -- / --                     | -- / --         | -- / --        | A / 3.4        | A / 3.4        | -- / --                   | -- / --         | -- / --        | A / 3.7        | A / 3.7        |
|                                                                                                             | NBLT      | -- / --                   | -- / --         | -- / --        | A / 5.7        | A / 5.7        | -- / --                  | -- / --         | -- / --        | A / 6.5        | A / 6.4        | -- / --                     | -- / --         | -- / --        | A / 7.4        | A / 6.9        | -- / --                   | -- / --         | -- / --        | A / 8.4        | A / 7.8        |
| Trader Joe's Plaza Dwy                                                                                      | NBTR      | -- / --                   | -- / --         | -- / --        | A / 6.2        | A / 6.2        | -- / --                  | -- / --         | -- / --        | A / 7.1        | A / 6.9        | -- / --                     | -- / --         | -- / --        | A / 8.1        | A / 7.6        | -- / --                   | -- / --         | -- / --        | A / 9.4        | A / 8.6        |
|                                                                                                             | WB        | -- / --                   | -- / --         | -- / --        | A / 6.7        | A / 6.6        | -- / --                  | -- / --         | -- / --        | A / 8.5        | A / 8.3        | -- / --                     | -- / --         | -- / --        | A / 10         | A / 9.4        | -- / --                   | -- / --         | -- / --        | B / 12.1       | B / 11.2       |
| Roundabout - Black Rock Turnpike at Katona Drive & Katona Drive Extension <sup>22</sup>                     |           |                           |                 |                |                |                |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Overall                                                                                                     |           | -- / --                   | -- / --         | -- / --        | E / 39.8       | -- / --        | -- / --                  | -- / --         | -- / --        | C / 15.6       | -- / --        | -- / --                     | -- / --         | -- / --        | D / 25.1       | -- / --        | -- / --                   | -- / --         | -- / --        | F / 57.5       | -- / --        |
| Katona Drive                                                                                                | EB        | -- / --                   | -- / --         | -- / --        | A / 6.5        | -- / --        | -- / --                  | -- / --         | -- / --        | B / 11.6       | -- / --        | -- / --                     | -- / --         | -- / --        | C / 19.2       | -- / --        | -- / --                   | -- / --         | -- / --        | C / 19.5       | -- / --        |
|                                                                                                             | SBLT      | -- / --                   | -- / --         | -- / --        | A / 5.3        | -- / --        | -- / --                  | -- / --         | -- / --        | A / 7.7        | -- / --        | -- / --                     | -- / --         | -- / --        | A / 9.4        | -- / --        | -- / --                   | -- / --         | -- / --        | B / 10.3       | -- / --        |
| Black Rock Turnpike                                                                                         | SBTR      | -- / --                   | -- / --         | -- / --        | A / 5.6        | -- / --        | -- / --                  | -- / --         | -- / --        | A / 8.6        | -- / --        | -- / --                     | -- / --         | -- / --        | B / 11         | -- / --        | -- / --                   | -- / --         | -- / --        | B / 12.2       | -- / --        |
|                                                                                                             | NB        | -- / --                   | -- / --         | -- / --        | F / 64.6       | -- / --        | -- / --                  | -- / --         | -- / --        | D / 27.6       | -- / --        | -- / --                     | -- / --         | -- / --        | F / 52.2       | -- / --        | -- / --                   | -- / --         | -- / --        | F / 134.3      | -- / --        |
| Katona Drive Extension                                                                                      | WB        | -- / --                   | -- / --         | -- / --        | B / 13.8       | -- / --        | -- / --                  | -- / --         | -- / --        | B / 13.8       | -- / --        | -- / --                     | -- / --         | -- / --        | B / 14.8       | -- / --        | -- / --                   | -- / --         | -- / --        | D / 27         | -- / --        |
| Roundabout - Black Rock Turnpike at Tunxis Hill Cutoff & Whitewood Drive <sup>23</sup>                      |           |                           |                 |                |                |                |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Overall                                                                                                     |           | -- / --                   | -- / --         | -- / --        | B / 12.5       | B / 12.5       | -- / --                  | -- / --         | -- / --        | B / 12.2       | B / 12.2       | -- / --                     | -- / --         | -- / --        | C / 21.2       | C / 21.2       | -- / --                   | -- / --         | -- / --        | C / 17.4       | C / 17.4       |
| Black Rock Turnpike                                                                                         | EBLR      | -- / --                   | -- / --         | -- / --        | A / 7.9        | A / 7.9        | -- / --                  | -- / --         | -- / --        | B / 11.2       | B / 11.2       | -- / --                     | -- / --         | -- / --        | C / 21.6       | C / 21.6       | -- / --                   | -- / --         | -- / --        | B / 14.4       | B / 14.4       |
|                                                                                                             | SBTR      | -- / --                   | -- / --         | -- / --        | A / 8.7        | A / 8.7        | -- / --                  | -- / --         | -- / --        | B / 13.3       | B / 13.3       | -- / --                     | -- / --         | -- / --        | C / 24.2       | C / 24.2       | -- / --                   | -- / --         | -- / --        | C / 19.1       | C / 19.1       |
| Tunxis Hill Cutoff                                                                                          | NBLT      | -- / --                   | -- / --         | -- / --        | C / 19.2       | C / 19.2       | -- / --                  | -- / --         | -- / --        | B / 11.2       | B / 11.2       | -- / --                     | -- / --         | -- / --        | B / 12.7       | B / 12.7       | -- / --                   | -- / --         | -- / --        | C / 17.5       | C / 17.5       |
| Whitewood Drive                                                                                             | WB        | -- / --                   | -- / --         | -- / --        | A / 9.1        | A / 9.1        | -- / --                  | -- / --         | -- / --        | A / 7          | A / 7          | -- / --                     | -- / --         | -- / --        | A / 7.3        | A / 7.3        | -- / --                   | -- / --         | -- / --        | A / 8.5        | A / 8.5        |

\*Lane uses shown reflect conditions in Concept A  
<sup>19</sup>Intersection signalized with Black Rock Turnpike, Tunxis Hill Cutoff, and Whitewood Drive in Existing Conditions  
<sup>20</sup>Intersection signalized in Existing Conditions and Concept B  
<sup>21</sup>Intersection unsignalized TWSC in Existing Conditions; Analyzed in Concepts A and B only  
<sup>22</sup>Intersection signalized in Existing Conditions and Concept B  
<sup>23</sup>Intersection signalized with Moritz Place in Existing Conditions



TABLE 2  
Intersection Operation Summary - Vehicular 50<sup>th</sup> / 95<sup>th</sup> Percentile Queue (In Feet)

|                                                                                    |                   |                     | Weekday Morning Peak Hour |                 |                |                |                | Weekday Midday Peak Hour |                 |                |                |                | Weekday Afternoon Peak Hour |                 |                |                |                | Saturday Midday Peak Hour |                 |                |                |                |
|------------------------------------------------------------------------------------|-------------------|---------------------|---------------------------|-----------------|----------------|----------------|----------------|--------------------------|-----------------|----------------|----------------|----------------|-----------------------------|-----------------|----------------|----------------|----------------|---------------------------|-----------------|----------------|----------------|----------------|
|                                                                                    | Lane Use*         | Available Storage** | 2017 Existing             | 2040 Background | 2040 Optimized | 2040 Concept A | 2040 Concept B | 2017 Existing            | 2040 Background | 2040 Optimized | 2040 Concept A | 2040 Concept B | 2017 Existing               | 2040 Background | 2040 Optimized | 2040 Concept A | 2040 Concept B | 2017 Existing             | 2040 Background | 2040 Optimized | 2040 Concept A | 2040 Concept B |
| Traffic Signal - Black Rock Turnpike at Old Black Rock Turnpike & Tahmore Drive    |                   |                     |                           |                 |                |                |                |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Old Black Rock Turnpike                                                            | EB                | 1000                | 3 / 17                    | 4 / 18          | 5 / 16         | 8 / 21         | 7 / 20         | 0 / 0                    | 0 / 0           | 0 / 0          | 0 / 2          | 0 / 2          | 0 / 0                       | 0 / 2           | 0 / 4          | 0 / 8          | 0 / 8          | 3 / 14                    | 3 / 14          | 4 / 18         | 4 / 16         | 5 / 19         |
| Tahmore Drive                                                                      | WB                | 615                 | 97 / 314                  | 119 / 337       | 155 / 281      | 299 / 347      | 239 / 323      | 10 / 50                  | 12 / 53         | 28 / 65        | 46 / 89        | 46 / 89        | 20 / 62                     | 22 / 64         | 33 / 101       | 61 / 123       | 61 / 123       | 43 / 86                   | 48 / 92         | 89 / 150       | 74 / 132       | 113 / 164      |
| Black Rock Turnpike                                                                | NB                | 1000                | 136 / 219                 | 149 / 241       | 47 / 79        | 419 / 389      | 232 / 238      | 90 / 190                 | 99 / 215        | 14 / 155       | 44 / 20        | 49 / 17        | 143 / 331                   | 161 / 387       | 85 / 82        | 215 / 715      | 374 / 356      | 160 / 337                 | 186 / 384       | 122 / 107      | 221 / 544      | 217 / 401      |
|                                                                                    | SB                | 1000                | 156 / 263                 | 174 / 299       | 254 / 483      | 414 / 778      | 357 / 560      | 113 / 249                | 126 / 289       | 133 / 291      | 152 / 308      | 152 / 308      | 518 / 769                   | 579 / 841       | 691 / 882      | 988 / 1196     | 988 / 1196     | 218 / 581                 | 266 / 643       | 352 / 573      | 324 / 683      | 383 / 696      |
| Traffic Signal - Black Rock Turnpike at Samp Mortar Drive                          |                   |                     |                           |                 |                |                |                |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Samp Mortar Drive                                                                  | EBL               | 1000                | 26 / 55                   | 28 / 57         | 26 / 54        | 49 / 87        | 40 / 74        | 41 / 72                  | 43 / 75         | 47 / 80        | 64 / 102       | 63 / 102       | 82 / 134                    | 87 / 138        | 83 / 137       | 123 / 187      | 123 / 187      | 61 / 96                   | 64 / 100        | 78 / 120       | 68 / 107       | 93 / 137       |
|                                                                                    | EBR               | 1000                | 0 / 39                    | 0 / 40          | 0 / 38         | 0 / 50         | 0 / 46         | 0 / 41                   | 0 / 41          | 0 / 43         | 0 / 48         | 0 / 48         | 0 / 64                      | 7 / 75          | 26 / 104       | 111 / 218      | 111 / 218      | 0 / 40                    | 0 / 41          | 11 / 56        | 0 / 42         | 34 / 87        |
| Black Rock Turnpike                                                                | NBL               | 50                  | 66 / 153                  | 71 / 171        | 10 / 99        | 81 / 238       | 84 / 86        | 30 / 62                  | 31 / 66         | 13 / 28        | 16 / 45        | 18 / 55        | 37 / 68                     | 40 / 72         | 15 / 64        | 56 / 110       | 63 / 124       | 24 / 59                   | 27 / 60         | 13 / 28        | 24 / 95        | 15 / 84        |
|                                                                                    | NBT               | 750                 | 313 / 466                 | 339 / 503       | 132 / 431      | 34 / 180       | 2 / 34         | 275 / 405                | 300 / 439       | 85 / 130       | 42 / 63        | 48 / 71        | 323 / 466                   | 356 / 575       | 149 / 305      | 96 / 305       | 115 / 122      | 299 / 464                 | 332 / 488       | 122 / 155      | 50 / 205       | 56 / 104       |
|                                                                                    | SBT <sup>1</sup>  | 1000                | 147 / 196                 | 165 / 218       | 115 / 188      | 189 / 421      | 212 / 561      | 92 / 159                 | 101 / 175       | 106 / 96       | 147 / 214      | 149 / 208      | 151 / 257                   | 169 / 293       | 136 / 183      | 691 / 742      | 691 / 742      | 120 / 207                 | 133 / 230       | 166 / 157      | 298 / 671      | 238 / 789      |
|                                                                                    | SBR               | 50                  | -- / --                   | -- / --         | -- / --        | 39 / 76        | 34 / 98        | -- / --                  | -- / --         | -- / --        | 7 / 18         | 7 / 17         | -- / --                     | -- / --         | -- / --        | 17 / 19        | 17 / 19        | -- / --                   | -- / --         | -- / --        | 4 / 10         | 6 / 28         |
| Traffic Signal - Black Rock Turnpike at Brookside Drive & Shell Driveway           |                   |                     |                           |                 |                |                |                |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Brookside Drive                                                                    | EBL <sup>2</sup>  | 50                  | -- / --                   | -- / --         | -- / --        | 38 / 71        | 31 / 61        | -- / --                  | -- / --         | -- / --        | 48 / 89        | 48 / 89        | -- / --                     | -- / --         | -- / --        | 98 / 140       | 98 / 140       | -- / --                   | -- / --         | -- / --        | 46 / 82        | 64 / 105       |
|                                                                                    | EBLTR             | 900                 | 33 / 63                   | 34 / 65         | 32 / 62        | 22 / 53        | 17 / 47        | 34 / 75                  | 38 / 80         | 46 / 89        | 6 / 44         | 6 / 44         | 92 / 128                    | 99 / 135        | 100 / 147      | 25 / 64        | 25 / 64        | 55 / 95                   | 59 / 99         | 79 / 124       | 0 / 0          | 0 / 10         |
| Shell Driveway <sup>3</sup>                                                        | WB                | 25                  | -- / --                   | -- / --         | -- / --        | 0 / 0          | 0 / 0          | -- / --                  | -- / --         | -- / --        | 0 / 0          | 0 / 0          | -- / --                     | -- / --         | -- / --        | 0 / 0          | 0 / 0          | -- / --                   | -- / --         | -- / --        | 3 / 32         | 4 / 37         |
| Black Rock Turnpike                                                                | NB                | 180                 | 30 / 59                   | 34 / 66         | 84 / 80        | 60 / 53        | 111 / 130      | 26 / 56                  | 39 / 63         | 71 / 74        | 72 / 58        | 55 / 39        | 62 / 80                     | 66 / 84         | 38 / 88        | 52 / 2         | 107 / 76       | 29 / 79                   | 53 / 87         | 65 / 100       | 46 / 37        | 117 / 97       |
|                                                                                    | SB                | 300                 | 8 / 7                     | 8 / 7           | 7 / 5          | 11 / 40        | 11 / 8         | 8 / 8                    | 9 / 10          | 33 / 78        | 15 / 51        | 15 / 51        | 215 / 27                    | 237 / 31        | 68 / 137       | 57 / 207       | 186 / 112      | 11 / 12                   | 12 / 14         | 30 / 88        | 63 / 47        | 68 / 67        |
| Traffic Signal - Black Rock Turnpike at Fairfield Woods Road & Commercial Driveway |                   |                     |                           |                 |                |                |                |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Commercial Driveway <sup>4</sup>                                                   | EBLT              | 35                  | 2 / 9                     | 2 / 9           | 2 / 8          | -- / --        | 3 / 10         | 9 / 22                   | 9 / 22          | 10 / 24        | -- / --        | 13 / 29        | 23 / 45                     | 25 / 47         | 26 / 54        | -- / --        | 34 / 70        | 24 / 51                   | 26 / 53         | 32 / 64        | -- / --        | 38 / 74        |
|                                                                                    | EBR               | 35                  | 0 / 0                     | 0 / 0           | 0 / 0          | -- / --        | 0 / 0          | 0 / 0                    | 0 / 0           | 0 / 0          | -- / --        | 0 / 0          | 0 / 0                       | 0 / 0           | 0 / 0          | -- / --        | 0 / 11         | 0 / 0                     | 0 / 0           | 0 / 0          | -- / --        | 0 / 6          |
| Fairfield Woods Road                                                               | WBL <sup>5</sup>  | 1000                | -- / --                   | -- / --         | -- / --        | 32 / 57        | -- / --        | -- / --                  | -- / --         | -- / --        | 51 / 79        | -- / --        | -- / --                     | -- / --         | -- / --        | 70 / 103       | -- / --        | -- / --                   | -- / --         | -- / --        | 64 / 100       | -- / --        |
|                                                                                    | WBLT <sup>5</sup> | 1000                | 18 / 44                   | 19 / 47         | 17 / 41        | -- / --        | 26 / 50        | 34 / 58                  | 35 / 60         | 38 / 64        | -- / --        | 123 / 160      | 43 / 72                     | 46 / 75         | 47 / 96        | -- / --        | 69 / 122       | 57 / 88                   | 60 / 92         | 75 / 111       | -- / --        | 89 / 130       |
|                                                                                    | WBR               | 1000                | 156 / 299                 | 168 / 324       | 146 / 272      | 275 / 354      | 224 / 302      | 77 / 111                 | 82 / 115        | 88 / 123       | 120 / 158      | 47 / 73        | 58 / 89                     | 61 / 93         | 63 / 125       | 95 / 133       | 95 / 137       | 68 / 101                  | 72 / 105        | 89 / 127       | 78 / 119       | 106 / 149      |
|                                                                                    | NBL               | 200                 | -- / --                   | -- / --         | -- / --        | -- / --        | 3 / 14         | -- / --                  | -- / --         | -- / --        | -- / --        | 9 / 29         | -- / --                     | -- / --         | -- / --        | -- / --        | 13 / 37        | -- / --                   | -- / --         | -- / --        | -- / --        | 9 / 27         |
| Black Rock Turnpike                                                                | NBTR <sup>6</sup> | 365                 | 106 / 141                 | 115 / 152       | 121 / 167      | 232 / 334      | 208 / 313      | 63 / 117                 | 71 / 131        | 73 / 133       | 128 / 198      | 133 / 217      | 61 / 116                    | 69 / 132        | 57 / 82        | 143 / 313      | 133 / 210      | 72 / 136                  | 81 / 153        | 90 / 154       | 138 / 232      | 142 / 220      |
|                                                                                    | SBL <sup>7</sup>  | 180                 | -- / --                   | -- / --         | -- / --        | 8 / 22         | 7 / 16         | -- / --                  | -- / --         | -- / --        | 2 / 9          | 6 / 35         | -- / --                     | -- / --         | -- / --        | 16 / 120       | 7 / 108        | -- / --                   | -- / --         | -- / --        | 4 / 3          | 1 / 22         |
|                                                                                    | SBT <sup>8</sup>  | 180                 | 21 / 22                   | 22 / 23         | 17 / 20        | 52 / 104       | 44 / 110       | 14 / 189                 | 15 / 211        | 40 / 153       | 1 / 6          | 45 / 194       | 96 / 390                    | 126 / 443       | 65 / 213       | 47 / 777       | 40 / 153       | 18 / 258                  | 20 / 295        | 28 / 125       | 24 / 57        | 12 / 119       |
| Traffic Signal - Black Rock Turnpike at Stillson Road                              |                   |                     |                           |                 |                |                |                |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Black Rock Turnpike                                                                | SBL               | 200                 | 35 / 75                   | 38 / 80         | 40 / 102       | 31 / 68        | 31 / 68        | 55 / 110                 | 61 / 117        | 58 / 114       | 44 / 104       | 44 / 104       | 67 / 120                    | 72 / 128        | 68 / 143       | 67 / 122       | 67 / 122       | 67 / 120                  | 72 / 128        | 69 / 155       | 68 / 146       | 68 / 146       |
|                                                                                    | SBTR              | 500                 | 167 / 228                 | 182 / 243       | 201 / 261      | 159 / 214      | 159 / 214      | 251 / 346                | 279 / 383       | 270 / 346      | 187 / 256      | 187 / 256      | 368 / 508                   | 410 / 556       | 361 / 492      | 345 / 434      | 345 / 434      | 336 / 454                 | 365 / 501       | 332 / 450      | 323 / 408      | 323 / 408      |
|                                                                                    | NBL               | 200                 | 138 / 287                 | 159 / 309       | 146 / 245      | 116 / 202      | 116 / 202      | 86 / 175                 | 95 / 195        | 91 / 188       | 67 / 146       | 67 / 146       | 108 / 213                   | 116 / 231       | 112 / 244      | 108 / 209      | 108 / 209      | 111 / 218                 | 118 / 235       | 113 / 238      | 111 / 216      | 111 / 216      |
|                                                                                    | NBTR              | 1000                | 270 / 354                 | 297 / 382       | 301 / 357      | 247 / 303      | 247 / 303      | 210 / 305                | 234 / 335       | 229 / 298      | 156 / 213      | 156 / 213      | 249 / 330                   | 272 / 353       | 247 / 316      | 233 / 300      | 233 / 300      | 300 / 391                 | 327 / 445       | 294 / 371      | 280 / 355      | 280 / 355      |
|                                                                                    | EBL               | 400                 | 72 / 108                  | 77 / 128        | 75 / 106       | 67 / 98        | 67 / 98        | 88 / 146                 | 99 / 154        | 94 / 159       | 80 / 136       | 80 / 136       | 115 / 173                   | 123 / 184       | 120 / 191      | 133 / 222      | 133 / 202      | 114 / 174                 | 122 / 186       | 119 / 193      | 127 / 215      | 127 / 215      |
| Stillson Road                                                                      | EBT <sup>9</sup>  | 1000                | 144 / 208                 | 156 / 223       | 151 / 201      | 98 / 142       | 98 / 142       | 198 / 323                | 222 / 382       | 211 / 358      | 102 / 180      | 101 / 173      | 352 / 608                   | 417 / 655       | 381 / 581      | 215 / 346      | 213 / 334      | 267 / 440                 | 289 / 481       | 272 / 462      | 153 / 238      | 153 / 238      |
|                                                                                    | EBR               | 75                  | -- / --                   | -- / --         | -- / --        | 0 / 0          | 0 / 0          | -- / --                  | -- / --         | -- / --        | 0 / 38         | 0 / 37         | -- / --                     | -- / --         | -- / --        | 44 / 112       | 44 / 111       | -- / --                   | -- / --         | -- / --        | 29 / 91        | 29 / 91        |
|                                                                                    | WBL               | 170                 | 48 / 78                   | 51 / 83         | 50 / 76        | 45 / 73        | 44 / 71        | 75 / 125                 | 83 / 132        | 78 / 136       | 71 / 122       | 67 / 117       | 93 / 157                    | 103 / 174       | 99 / 227       | 114 / 170      | 107 / 161      | 121 / 178                 | 130 / 215       | 127 / 242      | 144 / 212      | 135 / 200      |
|                                                                                    | WBT <sup>10</sup> | 1000                | 314 / 472                 | 348 / 517       | 322 / 393      | 236 / 308      | 236 / 308      | 150 / 250                | 166 / 264       | 159 / 256      | 100 / 187      | 100 / 187      | 240 / 335                   | 258 / 358       | 244 / 360      | 217 / 341      | 209 / 297      | 258 / 381                 | 277 / 417       | 255 / 367      | 211 / 304      | 211 / 304      |
|                                                                                    | WBR               | 75                  | -- / --                   | -- / --         | -- / --        | 25 / 49        | 25 / 49        | -- / --                  | -- / --         | -- / --        | 26 / 59        | 26 / 59        | -- / --                     | -- / --         | -- / --        | 31 / 64        | 30 / 62        | -- / --                   | -- / --         | -- / --        | 40 / 78        | 40 / 78        |

\*Lane uses shown reflect conditions in Concept A

\*\*Measured Available Storages limited to 1000 feet - Storages shown reflect conditions in Concept A

<sup>1</sup>SBTR in Existing Conditions

<sup>2</sup>EBL only present in Concepts A and B

<sup>3</sup>Shell Driveway unsignalized in Existing Conditions; Signalized and analyzed in Concepts A and B only

<sup>4</sup>Commercial Driveway relocated south to unsignalized location in Concept A and not analyzed

<sup>5</sup>WBLT in Existing Conditions and Concept B; WBL in Concept A due to relocation of commercial driveway

<sup>6</sup>NBLT and NBTR in Existing Conditions

<sup>7</sup>SBLT in Existing Conditions

<sup>8</sup>SBTR in Existing Conditions and Concept B; SBT in Concept A due to relocation of commercial driveway

<sup>9</sup>EBTR in Existing Conditions

<sup>10</sup>WBTR in Existing Conditions

TABLE 2 (CONTINUED)  
Intersection Operation Summary - Vehicular 50<sup>th</sup> / 95<sup>th</sup> Percentile Queue (In Feet)

|                                                                                                          |                    |                     | Weekday Morning Peak Hour |                 |                |                |                | Weekday Midday Peak Hour |                 |                |                |                | Weekday Afternoon Peak Hour |                 |                |                |                | Saturday Midday Peak Hour |                 |                |                |                |
|----------------------------------------------------------------------------------------------------------|--------------------|---------------------|---------------------------|-----------------|----------------|----------------|----------------|--------------------------|-----------------|----------------|----------------|----------------|-----------------------------|-----------------|----------------|----------------|----------------|---------------------------|-----------------|----------------|----------------|----------------|
|                                                                                                          | Lane Use*          | Available Storage** | 2017 Existing             | 2040 Background | 2040 Optimized | 2040 Concept A | 2040 Concept B | 2017 Existing            | 2040 Background | 2040 Optimized | 2040 Concept A | 2040 Concept B | 2017 Existing               | 2040 Background | 2040 Optimized | 2040 Concept A | 2040 Concept B | 2017 Existing             | 2040 Background | 2040 Optimized | 2040 Concept A | 2040 Concept B |
| Traffic Signal - Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza Driveways <sup>11</sup> |                    |                     |                           |                 |                |                |                |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Black Rock Turnpike                                                                                      | SB                 | 680                 | 31 / 50                   | 34 / 54         | 33 / 53        | -- / --        | 36 / 56        | 81 / 125                 | 92 / 138        | 92 / 143       | -- / --        | 92 / 138       | 119 / 171                   | 136 / 191       | 140 / 190      | -- / --        | 146 / 207      | 114 / 166                 | 136 / 201       | 143 / 202      | -- / --        | 143 / 202      |
|                                                                                                          | NB                 | 405                 | 62 / 125                  | 66 / 139        | 18 / 21        | -- / --        | 30 / 36        | 54 / 70                  | 57 / 73         | 33 / 41        | -- / --        | 48 / 108       | 65 / 83                     | 70 / 98         | 93 / 159       | -- / --        | 48 / 148       | 65 / 82                   | 70 / 150        | 42 / 119       | -- / --        | 67 / 111       |
| Turnpike Shopping Center Driveway                                                                        | EBLT               | 25                  | 29 / 56                   | 31 / 58         | 29 / 54        | -- / --        | 38 / 68        | 72 / 128                 | 76 / 135        | 83 / 143       | -- / --        | 76 / 135       | 84 / 135                    | 88 / 142        | 86 / 142       | -- / --        | 112 / 167      | 78 / 139                  | 79 / 139        | 104 / 174      | -- / --        | 104 / 174      |
|                                                                                                          | EBR                | 25                  | 0 / 0                     | 0 / 0           | 0 / 0          | -- / --        | 0 / 0          | 0 / 3                    | 0 / 5           | 0 / 8          | -- / --        | 0 / 5          | 0 / 21                      | 0 / 24          | 0 / 24         | -- / --        | 3 / 37         | 0 / 30                    | 0 / 32          | 7 / 49         | -- / --        | 7 / 49         |
| Fairway Plaza Driveway                                                                                   | WBLT               | 25                  | 14 / 36                   | 14 / 37         | 13 / 36        | -- / --        | 18 / 44        | 27 / 57                  | 28 / 59         | 31 / 63        | -- / --        | 28 / 59        | 21 / 46                     | 22 / 47         | 21 / 47        | -- / --        | 28 / 55        | 42 / 72                   | 42 / 71         | 55 / 90        | -- / --        | 55 / 90        |
|                                                                                                          | WBR                | 25                  | 0 / 0                     | 0 / 0           | 0 / 0          | -- / --        | 0 / 0          | 0 / 0                    | 0 / 0           | 0 / 0          | -- / --        | 0 / 0          | 0 / 0                       | 0 / 0           | 0 / 0          | -- / --        | 0 / 0          | 0 / 0                     | 0 / 0           | 0 / 0          | -- / --        | 0 / 0          |
| Traffic Signal - Black Rock Turnpike at Katona Drive & Katona Drive Extension <sup>12</sup>              |                    |                     |                           |                 |                |                |                |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Black Rock Turnpike                                                                                      | SB                 | 405                 | 8 / 30                    | 8 / 32          | 34 / 51        | -- / --        | 36 / 46        | 44 / 58                  | 47 / 62         | 64 / 90        | -- / --        | 44 / 61        | 54 / 77                     | 57 / 82         | 30 / 53        | -- / --        | 86 / 137       | 60 / 90                   | 64 / 125        | 91 / 120       | -- / --        | 75 / 121       |
|                                                                                                          | NBL                | 175                 | -- / --                   | -- / --         | -- / --        | -- / --        | 3 / 3          | -- / --                  | -- / --         | -- / --        | -- / --        | 5 / 7          | -- / --                     | -- / --         | -- / --        | -- / --        | 8 / 17         | -- / --                   | -- / --         | -- / --        | -- / --        | 9 / 17         |
|                                                                                                          | NBTR <sup>13</sup> | 300                 | 53 / 61                   | 56 / 63         | 34 / 31        | -- / --        | 56 / 58        | 40 / 51                  | 43 / 53         | 48 / 32        | -- / --        | 68 / 88        | 43 / 53                     | 46 / 56         | 36 / 33        | -- / --        | 135 / 233      | 49 / 61                   | 52 / 63         | 131 / 39       | -- / --        | 157 / 678      |
|                                                                                                          | EBL                | 75                  | -- / --                   | -- / --         | -- / --        | -- / --        | 46 / 89        | -- / --                  | -- / --         | -- / --        | -- / --        | 50 / 91        | -- / --                     | -- / --         | -- / --        | -- / --        | 71 / 109       | -- / --                   | -- / --         | -- / --        | -- / --        | 68 / 118       |
| Katona Drive                                                                                             | EBTR <sup>14</sup> | 1000                | 36 / 73                   | 38 / 76         | 35 / 73        | -- / --        | 3 / 31         | 48 / 84                  | 51 / 88         | 54 / 91        | -- / --        | 5 / 35         | 56 / 93                     | 59 / 98         | 59 / 94        | -- / --        | 8 / 40         | 54 / 100                  | 57 / 106        | 70 / 120       | -- / --        | 8 / 43         |
|                                                                                                          | EBR                | 250                 | 0 / 0                     | 0 / 0           | 0 / 0          | -- / --        | -- / --        | 0 / 3                    | 0 / 6           | 0 / 8          | -- / --        | -- / --        | 0 / 13                      | 0 / 16          | 0 / 15         | -- / --        | -- / --        | 0 / 3                     | 0 / 4           | 0 / 11         | -- / --        | -- / --        |
| Katona Drive Extension                                                                                   | WBL                | 135                 | 1 / 7                     | 1 / 7           | 1 / 7          | -- / --        | 2 / 10         | 2 / 8                    | 2 / 8           | 2 / 9          | -- / --        | 4 / 14         | 0 / 4                       | 0 / 4           | 0 / 4          | -- / --        | 4 / 14         | 1 / 8                     | 1 / 8           | 2 / 8          | -- / --        | 5 / 18         |
|                                                                                                          | WBTR               | 135                 | 1 / 8                     | 1 / 8           | 1 / 8          | -- / --        | 2 / 11         | 5 / 18                   | 5 / 20          | 6 / 21         | -- / --        | 5 / 23         | 2 / 14                      | 2 / 15          | 2 / 14         | -- / --        | 2 / 18         | 0 / 13                    | 0 / 13          | 1 / 14         | -- / --        | 1 / 18         |
| Traffic Signal - Black Rock Turnpike at Burroughs Road                                                   |                    |                     |                           |                 |                |                |                |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Black Rock Turnpike                                                                                      | SBL                | 65                  | -- / --                   | -- / --         | -- / --        | 5 / 16         | -- / --        | -- / --                  | -- / --         | -- / --        | 8 / 24         | -- / --        | -- / --                     | -- / --         | -- / --        | 11 / 34        | -- / --        | -- / --                   | -- / --         | -- / --        | 11 / 37        | -- / --        |
|                                                                                                          | SBTR <sup>15</sup> | 275                 | 26 / 32                   | 28 / 34         | 37 / 45        | 43 / 53        | 46 / 56        | 40 / 53                  | 43 / 57         | 25 / 36        | 61 / 94        | 47 / 64        | 41 / 64                     | 44 / 170        | 48 / 72        | 76 / 113       | 108 / 154      | 38 / 72                   | 48 / 77         | 89 / 133       | 68 / 101       | 95 / 20        |
|                                                                                                          | NBT <sup>16</sup>  | 925                 | 139 / 232                 | 157 / 253       | 104 / 235      | 282 / 609      | 518 / 847      | 72 / 135                 | 81 / 150        | 50 / 161       | 113 / 223      | 170 / 310      | 90 / 167                    | 102 / 187       | 53 / 155       | 155 / 283      | 250 / 475      | 98 / 178                  | 110 / 200       | 68 / 224       | 180 / 336      | 298 / 489      |
|                                                                                                          | NBR                | 130                 | -- / --                   | -- / --         | -- / --        | 0 / 11         | 6 / 24         | -- / --                  | -- / --         | -- / --        | 0 / 14         | 0 / 18         | -- / --                     | -- / --         | -- / --        | 0 / 16         | 4 / 29         | -- / --                   | -- / --         | -- / --        | 0 / 12         | 2 / 18         |
| Burroughs Road                                                                                           | EB                 | 1000                | 41 / 63                   | 43 / 66         | 39 / 62        | 47 / 82        | 53 / 83        | 34 / 56                  | 36 / 58         | 40 / 63        | 18 / 53        | 37 / 64        | 56 / 93                     | 58 / 96         | 58 / 100       | 36 / 95        | 72 / 116       | 36 / 66                   | 39 / 69         | 49 / 85        | 27 / 70        | 49 / 91        |
|                                                                                                          | WBL                | 125                 | -- / --                   | -- / --         | -- / --        | 77 / 148       | -- / --        | -- / --                  | -- / --         | -- / --        | 29 / 86        | -- / --        | -- / --                     | -- / --         | -- / --        | 36 / 99        | -- / --        | -- / --                   | -- / --         | -- / --        | 38 / 93        | -- / --        |
|                                                                                                          | WBTR <sup>17</sup> | 1000                | 141 / 178                 | 149 / 191       | 137 / 180      | 50 / 91        | 188 / 247      | 97 / 136                 | 104 / 144       | 114 / 156      | 11 / 47        | 106 / 158      | 95 / 152                    | 101 / 159       | 102 / 167      | 13 / 55        | 129 / 199      | 96 / 151                  | 102 / 159       | 131 / 201      | 15 / 58        | 131 / 235      |
| Traffic Signal - Black Rock Turnpike at Tunxis Hill Cutoff, Moritz Place & Whitewood Drive <sup>18</sup> |                    |                     |                           |                 |                |                |                |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Black Rock Turnpike                                                                                      | SBLT               | 835                 | 41 / 130                  | 44 / 144        | 31 / 134       | -- / --        | -- / --        | 56 / 199                 | 61 / 216        | 43 / 148       | -- / --        | -- / --        | 95 / 341                    | 106 / 403       | 95 / 279       | -- / --        | -- / --        | 74 / 253                  | 139 / 279       | 95 / 266       | -- / --        | -- / --        |
|                                                                                                          | SBR                | 835                 | 0 / 78                    | 0 / 84          | 0 / 125        | -- / --        | -- / --        | 0 / 109                  | 0 / 118         | 0 / 70         | -- / --        | -- / --        | 0 / 120                     | 0 / 130         | 0 / 76         | -- / --        | -- / --        | 0 / 134                   | 73 / 147        | 17 / 318       | -- / --        | -- / --        |
| Tunxis Hill Cutoff                                                                                       | NB                 | 1000                | 60 / 161                  | 64 / 180        | 67 / 165       | -- / --        | -- / --        | 30 / 99                  | 32 / 107        | 38 / 106       | -- / --        | -- / --        | 36 / 114                    | 40 / 124        | 45 / 108       | -- / --        | -- / --        | 49 / 155                  | 92 / 173        | 104 / 171      | -- / --        | -- / --        |
| Black Rock Turnpike                                                                                      | NWB                | 1000                | 26 / 82                   | 29 / 91         | 58 / 77        | -- / --        | -- / --        | 24 / 86                  | 27 / 95         | 67 / 108       | -- / --        | -- / --        | 43 / 130                    | 52 / 140        | 92 / 139       | -- / --        | -- / --        | 37 / 121                  | 66 / 130        | 108 / 154      | -- / --        | -- / --        |
| Moritz Place                                                                                             | NEB                | 935                 | 1 / 8                     | 1 / 8           | 1 / 8          | -- / --        | -- / --        | 2 / 16                   | 2 / 16          | 5 / 18         | -- / --        | -- / --        | 3 / 20                      | 4 / 20          | 6 / 21         | -- / --        | -- / --        | 4 / 22                    | 6 / 23          | 9 / 26         | -- / --        | -- / --        |
| Whitewood Drive                                                                                          | SWB                | 785                 | 5 / 30                    | 5 / 32          | 10 / 33        | -- / --        | -- / --        | 3 / 18                   | 3 / 19          | 7 / 21         | -- / --        | -- / --        | 2 / 13                      | 2 / 13          | 3 / 14         | -- / --        | -- / --        | 5 / 27                    | -- / --         | -- / --        | -- / --        | -- / --        |

\*Lane uses shown reflect conditions in Concept A  
\*\*Measured Available Storages limited to 1000 feet - Storages shown reflect conditions in Concept A  
<sup>11</sup>Intersection unsignalized TWSC in Concept A  
<sup>12</sup>Intersection is a roundabout in Concept A  
<sup>13</sup>NBLT and NBTR in Existing Conditions  
<sup>14</sup>EBLT Existing Conditions  
<sup>15</sup>SBLT & SBTR in Existing Conditions and Concept B  
<sup>16</sup>NBLT and NBTR in Existing Conditions; NBLT in Concept B  
<sup>17</sup>WBLTR in Existing Conditions and Concept B  
<sup>18</sup>Intersection is a roundabout with unsignalized TWSC on realigned Moritz Place in Concepts A and B

TABLE 2 (CONTINUED)  
Intersection Operation Summary - Vehicular 50<sup>th</sup> / 95<sup>th</sup> Percentile Queue (In Feet)

| Weekday Morning Peak Hour                                                                                   |                     |               |                 |                |                |                |     | Weekday Midday Peak Hour |                 |                |                |                | Weekday Afternoon Peak Hour |                 |                |                |                | Saturday Midday Peak Hour |                 |                |                |                |
|-------------------------------------------------------------------------------------------------------------|---------------------|---------------|-----------------|----------------|----------------|----------------|-----|--------------------------|-----------------|----------------|----------------|----------------|-----------------------------|-----------------|----------------|----------------|----------------|---------------------------|-----------------|----------------|----------------|----------------|
| Lane Use*                                                                                                   | Available Storage** | 2017 Existing | 2040 Background | 2040 Optimized | 2040 Concept A | 2040 Concept B |     | 2017 Existing            | 2040 Background | 2040 Optimized | 2040 Concept A | 2040 Concept B | 2017 Existing               | 2040 Background | 2040 Optimized | 2040 Concept A | 2040 Concept B | 2017 Existing             | 2040 Background | 2040 Optimized | 2040 Concept A | 2040 Concept B |
| Unsignalized TWSC - Tunxis Hill Cutoff at Tunxis Hill Road                                                  |                     |               |                 |                |                |                |     |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Tunxis Hill Road                                                                                            | EBL                 | 1000          | 0               | 0              | 0              | 0              |     | 0                        | 0               | 0              | 0              | 0              | 0                           | 0               | 0              | 0              | 0              | 3                         | 3               | 3              | 3              | 3              |
|                                                                                                             | EBR                 | 1000          | 8               | 8              | 8              | 8              |     | 8                        | 8               | 8              | 8              | 8              | 13                          | 13              | 13             | 13             | 13             | 8                         | 8               | 8              | 8              | 8              |
| Tunxis Hill Cutoff                                                                                          | NBL                 | 200           | 5               | 5              | 5              | 5              |     | 3                        | 3               | 3              | 3              | 3              | 5                           | 5               | 5              | 5              | 5              | 3                         | 3               | 3              | 3              | 3              |
| Unsignalized TWSC - Black Rock Turnpike at Judd Street                                                      |                     |               |                 |                |                |                |     |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Black Rock Turnpike                                                                                         | NBL                 | 25            | 5               | 5              | 5              | 5              |     | 5                        | 5               | 5              | 5              | 5              | 5                           | 5               | 5              | 5              | 5              | 5                         | 5               | 5              | 5              | 5              |
| Judd Street                                                                                                 | EB                  | 1000          | 18              | 23             | 23             | 23             |     | 20                       | 23              | 23             | 25             | 25             | 40                          | 48              | 48             | 60             | 60             | 30                        | 35              | 35             | 40             | 40             |
| Unsignalized TWSC - Black Rock Turnpike at Moritz Place <sup>19</sup>                                       |                     |               |                 |                |                |                |     |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Moritz Place                                                                                                | EBR                 | 935           | --              | --             | --             | 0              | 0   | --                       | --              | --             | 3              | 3              | --                          | --              | --             | 5              | 5              | --                        | --              | --             | 5              | 5              |
| Unsignalized TWSC - Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza Driveways <sup>20</sup> |                     |               |                 |                |                |                |     |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Turnpike Shopping Dwy                                                                                       | EBR                 | 90            | --              | --             | --             | 13             | --  | --                       | --              | --             | 60             | --             | --                          | --              | --             | 135            | --             | --                        | --              | --             | 120            | --             |
|                                                                                                             | SBL                 | 65            | --              | --             | --             | 5              | --  | --                       | --              | --             | 10             | --             | --                          | --              | --             | 10             | --             | --                        | --              | --             | 15             | --             |
| Black Rock Turnpike                                                                                         | NBL                 | 100           | --              | --             | --             | 3              | --  | --                       | --              | --             | 8              | --             | --                          | --              | --             | 13             | --             | --                        | --              | --             | 13             | --             |
| Fairway Plaza Driveway                                                                                      | WBR                 | 30            | --              | --             | --             | 3              | --  | --                       | --              | --             | 10             | --             | --                          | --              | --             | 10             | --             | --                        | --              | --             | 18             | --             |
| Roundabout - Black Rock Turnpike at Old Navy & Trader Joe's Plaza Driveways <sup>21</sup>                   |                     |               |                 |                |                |                |     |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Old Navy Plaza Driveway                                                                                     | EB                  | 65            | --              | --             | --             | 8              | 8   | --                       | --              | --             | 45             | 45             | --                          | --              | --             | 78             | 70             | --                        | --              | --             | 125            | 113            |
|                                                                                                             | SBLT                | 365           | --              | --             | --             | 53             | 53  | --                       | --              | --             | 108            | 103            | --                          | --              | --             | 188            | 160            | --                        | --              | --             | 213            | 178            |
|                                                                                                             | SBR                 | 50            | --              | --             | --             | 3              | 3   | --                       | --              | --             | 5              | 5              | --                          | --              | --             | 5              | 5              | --                        | --              | --             | 8              | 8              |
| Black Rock Turnpike                                                                                         | NBLT                | 500           | --              | --             | --             | 35             | 35  | --                       | --              | --             | 40             | 40             | --                          | --              | --             | 48             | 45             | --                        | --              | --             | 58             | 53             |
|                                                                                                             | NBTR                | 500           | --              | --             | --             | 43             | 43  | --                       | --              | --             | 48             | 48             | --                          | --              | --             | 58             | 55             | --                        | --              | --             | 73             | 65             |
| Trader Joe's Plaza Dwy                                                                                      | WB                  | 125           | --              | --             | --             | 8              | 8   | --                       | --              | --             | 28             | 28             | --                          | --              | --             | 38             | 35             | --                        | --              | --             | 53             | 50             |
| Roundabout - Black Rock Turnpike at Katona Drive & Katona Drive Extension <sup>22</sup>                     |                     |               |                 |                |                |                |     |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Katona Drive                                                                                                | EB                  | 1000          | --              | --             | --             | 15             | --  | --                       | --              | --             | 33             | --             | --                          | --              | --             | 63             | --             | --                        | --              | --             | 65             | --             |
|                                                                                                             | SBLT                | 1000          | --              | --             | --             | 25             | --  | --                       | --              | --             | 60             | --             | --                          | --              | --             | 90             | --             | --                        | --              | --             | 98             | --             |
| Black Rock Turnpike                                                                                         | SBTR                | 1000          | --              | --             | --             | 30             | --  | --                       | --              | --             | 75             | --             | --                          | --              | --             | 118            | --             | --                        | --              | --             | 130            | --             |
|                                                                                                             | NB                  | 265           | --              | --             | --             | 640            | --  | --                       | --              | --             | 278            | --             | --                          | --              | --             | 453            | --             | --                        | --              | --             | 878            | --             |
| Katona Drive Extension                                                                                      | WB                  | 135           | --              | --             | --             | 13             | --  | --                       | --              | --             | 30             | --             | --                          | --              | --             | 28             | --             | --                        | --              | --             | 73             | --             |
| Roundabout - Black Rock Turnpike at Tunxis Hill Cutoff & Whitewood Drive <sup>23</sup>                      |                     |               |                 |                |                |                |     |                          |                 |                |                |                |                             |                 |                |                |                |                           |                 |                |                |                |
| Black Rock Turnpike                                                                                         | EBLR                | 1000          | --              | --             | --             | 48             | 48  | --                       | --              | --             | 78             | 78             | --                          | --              | --             | 173            | 173            | --                        | --              | --             | 115            | 115            |
|                                                                                                             | SBTR                | 925           | --              | --             | --             | 80             | 80  | --                       | --              | --             | 165            | 165            | --                          | --              | --             | 348            | 348            | --                        | --              | --             | 260            | 260            |
| Tunxis Hill Cutoff                                                                                          | NBLT                | 1000          | --              | --             | --             | 180            | 180 | --                       | --              | --             | 73             | 73             | --                          | --              | --             | 85             | 85             | --                        | --              | --             | 143            | 143            |
| Whitewood Drive                                                                                             | WB                  | 785           | --              | --             | --             | 5              | 5   | --                       | --              | --             | 3              | 3              | --                          | --              | --             | 0              | 0              | --                        | --              | --             | 3              | 3              |

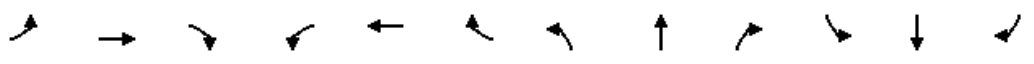
\*Lane uses shown reflect conditions in Concept A  
\*\*Measured Available Storages limited to 1000 feet - Storages shown reflect conditions in Concept A  
<sup>19</sup>Intersection signalized with Black Rock Turnpike, Tunxis Hill Cutoff, and Whitewood Drive in Existing Conditions  
<sup>20</sup>Intersection signalized in Existing Conditions and Concept B  
<sup>21</sup>Intersection unsignalized TWSC in Existing Conditions; Analyzed in Concepts A and B only  
<sup>22</sup>Intersection signalized in Existing Conditions and Concept B  
<sup>23</sup>Intersection signalized with Moritz Place in Existing Conditions



**APPENDIX B**  
Capacity Analysis Worksheets

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahoe Drive Existing Conditions Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |       |      |       |       |      |       |       |      |       |       |      |
|-------------------------|------------------------------------------------------------------------------------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|
| Lane Group              | EBL                                                                                | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
| Lane Configurations     |                                                                                    | ↔     |      |       | ↔     |      |       | ↔     |      |       | ↔     |      |
| Traffic Volume (vph)    | 10                                                                                 | 1     | 3    | 193   | 0     | 158  | 2     | 642   | 25   | 61    | 607   | 4    |
| Future Volume (vph)     | 10                                                                                 | 1     | 3    | 193   | 0     | 158  | 2     | 642   | 25   | 61    | 607   | 4    |
| Ideal Flow (vphpl)      | 1900                                                                               | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12                                                                                 | 16    | 12   | 12    | 16    | 12   | 12    | 13    | 12   | 12    | 13    | 12   |
| Lane Util. Factor       | 1.00                                                                               | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 |
| Frt                     |                                                                                    | 0.970 |      |       | 0.939 |      |       | 0.995 |      |       | 0.999 |      |
| Flt Protected           |                                                                                    | 0.965 |      |       | 0.973 |      |       |       |      |       | 0.995 |      |
| Satd. Flow (prot)       | 0                                                                                  | 1957  | 0    | 0     | 1910  | 0    | 0     | 1897  | 0    | 0     | 1895  | 0    |
| Flt Permitted           |                                                                                    | 0.792 |      |       | 0.819 |      |       | 0.998 |      |       | 0.899 |      |
| Satd. Flow (perm)       | 0                                                                                  | 1606  | 0    | 0     | 1608  | 0    | 0     | 1893  | 0    | 0     | 1712  | 0    |
| Right Turn on Red       |                                                                                    |       | Yes  |       |       | Yes  |       |       | Yes  |       |       | Yes  |
| Satd. Flow (RTOR)       |                                                                                    | 4     |      |       | 55    |      |       | 6     |      |       | 1     |      |
| Link Speed (mph)        |                                                                                    | 25    |      |       | 30    |      |       | 35    |      |       | 35    |      |
| Link Distance (ft)      |                                                                                    | 378   |      |       | 442   |      |       | 1898  |      |       | 522   |      |
| Travel Time (s)         |                                                                                    | 10.3  |      |       | 10.0  |      |       | 37.0  |      |       | 10.2  |      |
| Peak Hour Factor        | 0.80                                                                               | 0.80  | 0.80 | 0.84  | 0.84  | 0.84 | 0.94  | 0.94  | 0.94 | 0.91  | 0.91  | 0.91 |
| Heavy Vehicles (%)      | 3%                                                                                 | 3%    | 3%   | 3%    | 3%    | 3%   | 3%    | 3%    | 3%   | 3%    | 3%    | 3%   |
| Adj. Flow (vph)         | 13                                                                                 | 1     | 4    | 230   | 0     | 188  | 2     | 683   | 27   | 67    | 667   | 4    |
| Shared Lane Traffic (%) |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 0                                                                                  | 18    | 0    | 0     | 418   | 0    | 0     | 712   | 0    | 0     | 738   | 0    |
| Turn Type               | Perm                                                                               | NA    |      | Perm  | NA    |      | Perm  | NA    |      | Perm  | NA    |      |
| Protected Phases        |                                                                                    | 4     |      |       | 8     |      |       | 2     |      |       | 6     |      |
| Permitted Phases        | 4                                                                                  |       |      | 8     |       |      | 2     |       |      | 6     |       |      |
| Detector Phase          | 4                                                                                  | 4     |      | 8     | 8     |      | 2     | 2     |      | 6     | 6     |      |
| Switch Phase            |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Minimum Initial (s)     | 7.0                                                                                | 7.0   |      | 7.0   | 7.0   |      | 15.0  | 15.0  |      | 15.0  | 15.0  |      |
| Minimum Split (s)       | 11.7                                                                               | 11.7  |      | 11.7  | 11.7  |      | 20.6  | 20.6  |      | 20.6  | 20.6  |      |
| Total Split (s)         | 17.7                                                                               | 17.7  |      | 17.7  | 17.7  |      | 48.6  | 48.6  |      | 48.6  | 48.6  |      |
| Total Split (%)         | 26.7%                                                                              | 26.7% |      | 26.7% | 26.7% |      | 73.3% | 73.3% |      | 73.3% | 73.3% |      |
| Yellow Time (s)         | 3.3                                                                                | 3.3   |      | 3.3   | 3.3   |      | 4.0   | 4.0   |      | 4.0   | 4.0   |      |
| All-Red Time (s)        | 1.4                                                                                | 1.4   |      | 1.4   | 1.4   |      | 1.6   | 1.6   |      | 1.6   | 1.6   |      |
| Lost Time Adjust (s)    |                                                                                    | 0.0   |      |       | 0.0   |      |       | 0.0   |      |       | 0.0   |      |
| Total Lost Time (s)     |                                                                                    | 4.7   |      |       | 4.7   |      |       | 5.6   |      |       | 5.6   |      |
| Lead/Lag                |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Lead-Lag Optimize?      |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Recall Mode             | None                                                                               | None  |      | None  | None  |      | Min   | Min   |      | Min   | Min   |      |
| Act Effect Green (s)    |                                                                                    | 13.5  |      |       | 13.5  |      |       | 26.2  |      |       | 26.2  |      |
| Actuated g/C Ratio      |                                                                                    | 0.27  |      |       | 0.27  |      |       | 0.52  |      |       | 0.52  |      |
| v/c Ratio               |                                                                                    | 0.04  |      |       | 0.89  |      |       | 0.72  |      |       | 0.83  |      |
| Control Delay           |                                                                                    | 17.1  |      |       | 44.5  |      |       | 13.2  |      |       | 18.5  |      |
| Queue Delay             |                                                                                    | 0.0   |      |       | 0.0   |      |       | 0.0   |      |       | 0.0   |      |
| Total Delay             |                                                                                    | 17.1  |      |       | 44.5  |      |       | 13.2  |      |       | 18.5  |      |
| LOS                     |                                                                                    | B     |      |       | D     |      |       | B     |      |       | B     |      |
| Approach Delay          |                                                                                    | 17.1  |      |       | 44.5  |      |       | 13.2  |      |       | 18.5  |      |
| Approach LOS            |                                                                                    | B     |      |       | D     |      |       | B     |      |       | B     |      |
| Queue Length 50th (ft)  |                                                                                    | 3     |      |       | 97    |      |       | 136   |      |       | 156   |      |
| Queue Length 95th (ft)  |                                                                                    | 17    |      |       | #314  |      |       | 219   |      |       | 263   |      |
| Internal Link Dist (ft) |                                                                                    | 298   |      |       | 362   |      |       | 1818  |      |       | 442   |      |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive Existing Conditions Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Turn Bay Length (ft)   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)    |                                                                                   | 432                                                                               |                                                                                   |                                                                                   | 470                                                                               |                                                                                   |                                                                                    | 1630                                                                                |                                                                                     |                                                                                     | 1473                                                                                |                                                                                     |
| Starvation Cap Reductn |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   | 0.04                                                                              |                                                                                   |                                                                                   | 0.89                                                                              |                                                                                   |                                                                                    | 0.44                                                                                |                                                                                     |                                                                                     | 0.50                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 66.3

Actuated Cycle Length: 50.3

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 22.2

Intersection LOS: C

Intersection Capacity Utilization 105.8%

ICU Level of Service G

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

|                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø2   |  Ø4   |
| 48.6 s                                                                                 | 17.7 s                                                                                   |
|  Ø6 |  Ø8 |
| 48.6 s                                                                                 | 17.7 s                                                                                   |



# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

## Lanes, Volumes, Timings

2017 Existing Conditions

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |      |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3   |
| Lane Configurations     |  |  |  |  |  |  |      |
| Traffic Volume (vph)    | 51                                                                                | 128                                                                               | 346                                                                               | 698                                                                               | 587                                                                               | 187                                                                               |      |
| Future Volume (vph)     | 51                                                                                | 128                                                                               | 346                                                                               | 698                                                                               | 587                                                                               | 187                                                                               |      |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |      |
| Lane Width (ft)         | 10                                                                                | 10                                                                                | 11                                                                                | 11                                                                                | 12                                                                                | 12                                                                                |      |
| Storage Length (ft)     | 0                                                                                 | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   | 0                                                                                 |      |
| Storage Lanes           | 1                                                                                 | 1                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |      |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              |      |
| Frt                     |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.964                                                                             |                                                                                   |      |
| Flt Protected           | 0.950                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |      |
| Satd. Flow (prot)       | 1636                                                                              | 1463                                                                              | 1694                                                                              | 1783                                                                              | 3379                                                                              | 0                                                                                 |      |
| Flt Permitted           | 0.950                                                                             |                                                                                   | 0.196                                                                             |                                                                                   |                                                                                   |                                                                                   |      |
| Satd. Flow (perm)       | 1636                                                                              | 1463                                                                              | 350                                                                               | 1783                                                                              | 3379                                                                              | 0                                                                                 |      |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |      |
| Satd. Flow (RTOR)       |                                                                                   | 154                                                                               |                                                                                   |                                                                                   | 51                                                                                |                                                                                   |      |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 35                                                                                |                                                                                   |      |
| Link Distance (ft)      | 445                                                                               |                                                                                   |                                                                                   | 510                                                                               | 341                                                                               |                                                                                   |      |
| Travel Time (s)         | 12.1                                                                              |                                                                                   |                                                                                   | 11.6                                                                              | 6.6                                                                               |                                                                                   |      |
| Peak Hour Factor        | 0.83                                                                              | 0.83                                                                              | 0.91                                                                              | 0.91                                                                              | 0.94                                                                              | 0.94                                                                              |      |
| Heavy Vehicles (%)      | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                |      |
| Adj. Flow (vph)         | 61                                                                                | 154                                                                               | 380                                                                               | 767                                                                               | 624                                                                               | 199                                                                               |      |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Group Flow (vph)   | 61                                                                                | 154                                                                               | 380                                                                               | 767                                                                               | 823                                                                               | 0                                                                                 |      |
| Turn Type               | Prot                                                                              | Perm                                                                              | pm+pt                                                                             | NA                                                                                | NA                                                                                |                                                                                   |      |
| Protected Phases        | 4                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 | 2                                                                                 |                                                                                   | 3    |
| Permitted Phases        |                                                                                   | 4                                                                                 | 6                                                                                 |                                                                                   |                                                                                   |                                                                                   |      |
| Detector Phase          | 4                                                                                 | 4                                                                                 | 1                                                                                 | 6                                                                                 | 2                                                                                 |                                                                                   |      |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               | 5.0                                                                               | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0  |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              | 9.2                                                                               | 21.9                                                                              | 21.9                                                                              |                                                                                   | 22.0 |
| Total Split (s)         | 21.9                                                                              | 21.9                                                                              | 9.2                                                                               | 31.1                                                                              | 21.9                                                                              |                                                                                   | 22.0 |
| Total Split (%)         | 29.2%                                                                             | 29.2%                                                                             | 12.3%                                                                             | 41.5%                                                                             | 29.2%                                                                             |                                                                                   | 29%  |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               | 3.2                                                                               | 4.9                                                                               | 4.9                                                                               |                                                                                   | 4.0  |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 2.0                                                                               | 2.0                                                                               |                                                                                   | 0.0  |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               | 4.2                                                                               | 6.9                                                                               | 6.9                                                                               |                                                                                   |      |
| Lead/Lag                | Lag                                                                               | Lag                                                                               | Lead                                                                              |                                                                                   | Lag                                                                               |                                                                                   | Lead |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               |                                                                                   | Yes  |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                             | C-Max                                                                             |                                                                                   | None |
| Act Effect Green (s)    | 9.3                                                                               | 9.3                                                                               | 57.5                                                                              | 54.8                                                                              | 25.8                                                                              |                                                                                   |      |
| Actuated g/C Ratio      | 0.12                                                                              | 0.12                                                                              | 0.77                                                                              | 0.73                                                                              | 0.34                                                                              |                                                                                   |      |
| v/c Ratio               | 0.30                                                                              | 0.49                                                                              | 0.53                                                                              | 0.59                                                                              | 0.69                                                                              |                                                                                   |      |
| Control Delay           | 33.9                                                                              | 11.3                                                                              | 9.4                                                                               | 14.0                                                                              | 22.3                                                                              |                                                                                   |      |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Total Delay             | 33.9                                                                              | 11.3                                                                              | 9.4                                                                               | 14.0                                                                              | 22.3                                                                              |                                                                                   |      |
| LOS                     | C                                                                                 | B                                                                                 | A                                                                                 | B                                                                                 | C                                                                                 |                                                                                   |      |
| Approach Delay          | 17.7                                                                              |                                                                                   |                                                                                   | 12.5                                                                              | 22.3                                                                              |                                                                                   |      |
| Approach LOS            | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 | C                                                                                 |                                                                                   |      |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive Lanes, Volumes, Timings

2017 Existing Conditions  
Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |    |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3 |
| Queue Length 50th (ft)  | 26                                                                                | 0                                                                                 | 66                                                                                | 313                                                                               | 147                                                                               |                                                                                   |    |
| Queue Length 95th (ft)  | 55                                                                                | 39                                                                                | 153                                                                               | 466                                                                               | 196                                                                               |                                                                                   |    |
| Internal Link Dist (ft) | 365                                                                               |                                                                                   |                                                                                   | 430                                                                               | 261                                                                               |                                                                                   |    |
| Turn Bay Length (ft)    |                                                                                   | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   |                                                                                   |    |
| Base Capacity (vph)     | 390                                                                               | 466                                                                               | 711                                                                               | 1301                                                                              | 1197                                                                              |                                                                                   |    |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Reduced v/c Ratio       | 0.16                                                                              | 0.33                                                                              | 0.53                                                                              | 0.59                                                                              | 0.69                                                                              |                                                                                   |    |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 22 (29%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 16.7

Intersection LOS: B

Intersection Capacity Utilization 61.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

|                                                                                            |                                                                                            |                                                                                        |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø3 |  Ø4 |
| 9.2 s                                                                                      | 21.9 s                                                                                     | 22 s                                                                                   | 21.9 s                                                                                   |
|  Ø6 (R) |                                                                                            |                                                                                        |                                                                                          |
| 31.1 s                                                                                     |                                                                                            |                                                                                        |                                                                                          |

# 103: Route 58 (Black Rock Turnpike) & Brookside Drive

## Lanes, Volumes, Timings

2017 Existing Conditions

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (vph)    | 58                                                                                | 14                                                                                | 56                                                                                | 992                                                                               | 553                                                                               | 171                                                                               |
| Future Volume (vph)     | 58                                                                                | 14                                                                                | 56                                                                                | 992                                                                               | 553                                                                               | 171                                                                               |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              |
| Frt                     | 0.973                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.965                                                                             |                                                                                   |
| Flt Protected           | 0.961                                                                             |                                                                                   |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1955                                                                              | 0                                                                                 | 0                                                                                 | 3494                                                                              | 3382                                                                              | 0                                                                                 |
| Flt Permitted           | 0.961                                                                             |                                                                                   |                                                                                   | 0.860                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1955                                                                              | 0                                                                                 | 0                                                                                 | 3014                                                                              | 3382                                                                              | 0                                                                                 |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |
| Satd. Flow (RTOR)       | 16                                                                                |                                                                                   |                                                                                   |                                                                                   | 66                                                                                |                                                                                   |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 347                                                                               |                                                                                   |                                                                                   | 293                                                                               | 336                                                                               |                                                                                   |
| Travel Time (s)         | 9.5                                                                               |                                                                                   |                                                                                   | 6.7                                                                               | 7.6                                                                               |                                                                                   |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.90                                                                              | 0.90                                                                              | 0.88                                                                              | 0.88                                                                              |
| Heavy Vehicles (%)      | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                |
| Adj. Flow (vph)         | 73                                                                                | 18                                                                                | 62                                                                                | 1102                                                                              | 628                                                                               | 194                                                                               |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 91                                                                                | 0                                                                                 | 0                                                                                 | 1164                                                                              | 822                                                                               | 0                                                                                 |
| Turn Type               | Prot                                                                              |                                                                                   | pm+pt                                                                             | NA                                                                                | NA                                                                                |                                                                                   |
| Protected Phases        | 4                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                 | 6                                                                                 |                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Detector Phase          | 4                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                 | 6                                                                                 |                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)     | 9.0                                                                               |                                                                                   | 3.0                                                                               | 15.0                                                                              | 15.0                                                                              |                                                                                   |
| Minimum Split (s)       | 13.0                                                                              |                                                                                   | 8.9                                                                               | 20.4                                                                              | 20.4                                                                              |                                                                                   |
| Total Split (s)         | 25.0                                                                              |                                                                                   | 14.0                                                                              | 50.0                                                                              | 36.0                                                                              |                                                                                   |
| Total Split (%)         | 33.3%                                                                             |                                                                                   | 18.7%                                                                             | 66.7%                                                                             | 48.0%                                                                             |                                                                                   |
| Yellow Time (s)         | 3.0                                                                               |                                                                                   | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               |                                                                                   |
| All-Red Time (s)        | 1.0                                                                               |                                                                                   | 1.7                                                                               | 1.2                                                                               | 1.2                                                                               |                                                                                   |
| Lost Time Adjust (s)    | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |
| Total Lost Time (s)     | 4.0                                                                               |                                                                                   |                                                                                   | 5.4                                                                               | 5.4                                                                               |                                                                                   |
| Lead/Lag                |                                                                                   |                                                                                   | Lag                                                                               |                                                                                   | Lead                                                                              |                                                                                   |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   | Yes                                                                               |                                                                                   |
| Recall Mode             | None                                                                              |                                                                                   | None                                                                              | C-Max                                                                             | C-Max                                                                             |                                                                                   |
| Act Effect Green (s)    | 9.3                                                                               |                                                                                   |                                                                                   | 60.0                                                                              | 60.0                                                                              |                                                                                   |
| Actuated g/C Ratio      | 0.12                                                                              |                                                                                   |                                                                                   | 0.80                                                                              | 0.80                                                                              |                                                                                   |
| v/c Ratio               | 0.36                                                                              |                                                                                   |                                                                                   | 0.48                                                                              | 0.30                                                                              |                                                                                   |
| Control Delay           | 29.4                                                                              |                                                                                   |                                                                                   | 2.4                                                                               | 0.6                                                                               |                                                                                   |
| Queue Delay             | 0.0                                                                               |                                                                                   |                                                                                   | 0.1                                                                               | 0.0                                                                               |                                                                                   |
| Total Delay             | 29.4                                                                              |                                                                                   |                                                                                   | 2.5                                                                               | 0.6                                                                               |                                                                                   |
| LOS                     | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |
| Approach Delay          | 29.4                                                                              |                                                                                   |                                                                                   | 2.5                                                                               | 0.6                                                                               |                                                                                   |
| Approach LOS            | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |
| Queue Length 50th (ft)  | 33                                                                                |                                                                                   |                                                                                   | 30                                                                                | 8                                                                                 |                                                                                   |
| Queue Length 95th (ft)  | 63                                                                                |                                                                                   |                                                                                   | m59                                                                               | 7                                                                                 |                                                                                   |
| Internal Link Dist (ft) | 267                                                                               |                                                                                   |                                                                                   | 213                                                                               | 256                                                                               |                                                                                   |



# 103: Route 58 (Black Rock Turnpike) & Brookside Drive Lanes, Volumes, Timings

2017 Existing Conditions

Timing Plan: Weekday AM Peak

|                        |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Turn Bay Length (ft)   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Base Capacity (vph)    | 558                                                                               |                                                                                   |                                                                                   | 2409                                                                              | 2717                                                                              |                                                                                   |
| Starvation Cap Reductn | 0                                                                                 |                                                                                   |                                                                                   | 224                                                                               | 0                                                                                 |                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |
| Storage Cap Reductn    | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |
| Reduced v/c Ratio      | 0.16                                                                              |                                                                                   |                                                                                   | 0.53                                                                              | 0.30                                                                              |                                                                                   |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 45 (60%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.48

Intersection Signal Delay: 2.9

Intersection LOS: A

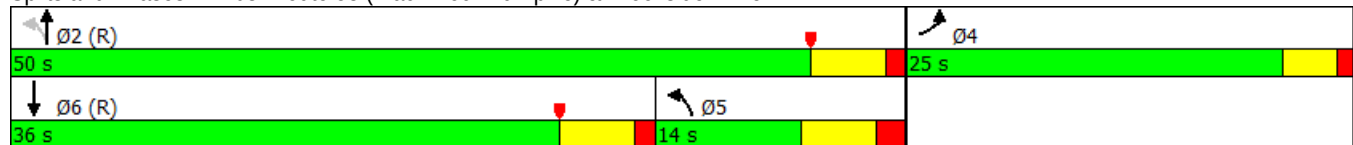
Intersection Capacity Utilization 69.6%

ICU Level of Service C

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive



# 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield 2017 Existing Conditions Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

| Lane Group              | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|------|
| Lane Configurations     |       | ↩     | ↪     |       | ↩     | ↪     |       | ↕     |      |       | ↕     |      |
| Traffic Volume (vph)    | 5     | 0     | 1     | 47    | 0     | 321   | 8     | 739   | 24   | 79    | 503   | 3    |
| Future Volume (vph)     | 5     | 0     | 1     | 47    | 0     | 321   | 8     | 739   | 24   | 79    | 503   | 3    |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12    | 12    | 12    | 12    | 12    | 11    | 12    | 11    | 12   | 12    | 11    | 12   |
| Storage Length (ft)     | 0     |       | 0     | 0     |       | 75    | 0     |       | 0    | 0     |       | 0    |
| Storage Lanes           | 0     |       | 1     | 0     |       | 1     | 0     |       | 0    | 0     |       | 0    |
| Taper Length (ft)       | 25    |       |       | 25    |       |       | 25    |       |      | 25    |       |      |
| Lane Util. Factor       | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 0.95  | 0.95  | 0.95 | 0.95  | 0.95  | 0.95 |
| Frt                     |       |       | 0.850 |       |       | 0.850 |       | 0.995 |      |       | 0.999 |      |
| Flt Protected           |       | 0.950 |       |       | 0.950 |       |       | 0.999 |      |       | 0.993 |      |
| Satd. Flow (prot)       | 0     | 1752  | 1568  | 0     | 1752  | 1516  | 0     | 3368  | 0    | 0     | 3361  | 0    |
| Flt Permitted           |       | 0.723 |       |       | 0.754 |       |       | 0.949 |      |       | 0.740 |      |
| Satd. Flow (perm)       | 0     | 1334  | 1568  | 0     | 1391  | 1516  | 0     | 3199  | 0    | 0     | 2505  | 0    |
| Right Turn on Red       |       |       | Yes   |       |       | No    |       |       | Yes  |       |       | Yes  |
| Satd. Flow (RTOR)       |       |       | 128   |       |       |       |       | 5     |      |       | 1     |      |
| Link Speed (mph)        |       | 30    |       |       | 25    |       |       | 30    |      |       | 30    |      |
| Link Distance (ft)      |       | 87    |       |       | 499   |       |       | 713   |      |       | 293   |      |
| Travel Time (s)         |       | 2.0   |       |       | 13.6  |       |       | 16.2  |      |       | 6.7   |      |
| Peak Hour Factor        | 0.80  | 0.80  | 0.80  | 0.90  | 0.90  | 0.90  | 0.88  | 0.88  | 0.88 | 0.92  | 0.92  | 0.92 |
| Heavy Vehicles (%)      | 3%    | 3%    | 3%    | 3%    | 3%    | 3%    | 3%    | 3%    | 3%   | 3%    | 3%    | 3%   |
| Adj. Flow (vph)         | 6     | 0     | 1     | 52    | 0     | 357   | 9     | 840   | 27   | 86    | 547   | 3    |
| Shared Lane Traffic (%) |       |       |       |       |       |       |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 0     | 6     | 1     | 0     | 52    | 357   | 0     | 876   | 0    | 0     | 636   | 0    |
| Turn Type               | Perm  | NA    | Perm  | Perm  | NA    | Perm  | Perm  | NA    |      | pm+pt | NA    |      |
| Protected Phases        |       | 4     |       |       | 8     |       |       | 2     |      | 1     | 6     |      |
| Permitted Phases        | 4     |       | 4     | 8     |       | 8     | 2     |       |      | 6     |       |      |
| Detector Phase          | 4     | 4     | 4     | 8     | 8     | 8     | 2     | 2     |      | 1     | 6     |      |
| Switch Phase            |       |       |       |       |       |       |       |       |      |       |       |      |
| Minimum Initial (s)     | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 15.0  | 15.0  |      | 3.0   | 15.0  |      |
| Minimum Split (s)       | 13.0  | 13.0  | 13.0  | 13.0  | 13.0  | 13.0  | 20.3  | 20.3  |      | 9.5   | 20.3  |      |
| Total Split (s)         | 25.0  | 25.0  | 25.0  | 25.0  | 25.0  | 25.0  | 36.0  | 36.0  |      | 14.0  | 50.0  |      |
| Total Split (%)         | 33.3% | 33.3% | 33.3% | 33.3% | 33.3% | 33.3% | 48.0% | 48.0% |      | 18.7% | 66.7% |      |
| Yellow Time (s)         | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 4.3   | 4.3   |      | 4.3   | 4.3   |      |
| All-Red Time (s)        | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |      | 2.2   | 1.0   |      |
| Lost Time Adjust (s)    |       | 0.0   | 0.0   |       | 0.0   | 0.0   |       | 0.0   |      |       | 0.0   |      |
| Total Lost Time (s)     |       | 4.0   | 4.0   |       | 4.0   | 4.0   |       | 5.3   |      |       | 5.3   |      |
| Lead/Lag                |       |       |       |       |       |       | Lead  | Lead  |      | Lag   |       |      |
| Lead-Lag Optimize?      |       |       |       |       |       |       | Yes   | Yes   |      | Yes   |       |      |
| Recall Mode             | None  | None  | None  | None  | None  | None  | C-Max | C-Max |      | None  | C-Max |      |
| Act Effect Green (s)    |       | 19.7  | 19.7  |       | 19.7  | 19.7  |       | 46.0  |      |       | 46.0  |      |
| Actuated g/C Ratio      |       | 0.26  | 0.26  |       | 0.26  | 0.26  |       | 0.61  |      |       | 0.61  |      |
| v/c Ratio               |       | 0.02  | 0.00  |       | 0.14  | 0.90  |       | 0.45  |      |       | 0.41  |      |
| Control Delay           |       | 19.8  | 0.0   |       | 21.6  | 53.7  |       | 8.8   |      |       | 3.0   |      |
| Queue Delay             |       | 0.0   | 0.0   |       | 0.0   | 0.0   |       | 0.0   |      |       | 0.2   |      |
| Total Delay             |       | 19.8  | 0.0   |       | 21.6  | 53.7  |       | 8.8   |      |       | 3.2   |      |
| LOS                     |       | B     | A     |       | C     | D     |       | A     |      |       | A     |      |
| Approach Delay          |       | 17.0  |       |       | 49.6  |       |       | 8.8   |      |       | 3.2   |      |
| Approach LOS            |       | B     |       |       | D     |       |       | A     |      |       | A     |      |

# 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road Conditions Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  |                                                                                   | 2                                                                                 | 0                                                                                 |                                                                                   | 18                                                                                | 156                                                                               |                                                                                    | 106                                                                                 |                                                                                     |                                                                                     | 21                                                                                  |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 9                                                                                 | 0                                                                                 |                                                                                   | 44                                                                                | #299                                                                              |                                                                                    | 141                                                                                 |                                                                                     |                                                                                     | 22                                                                                  |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 7                                                                                 |                                                                                   |                                                                                   | 419                                                                               |                                                                                   |                                                                                    | 633                                                                                 |                                                                                     |                                                                                     | 213                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 75                                                                                |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 373                                                                               | 531                                                                               |                                                                                   | 389                                                                               | 424                                                                               |                                                                                    | 1963                                                                                |                                                                                     |                                                                                     | 1536                                                                                |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 243                                                                                 |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.02                                                                              | 0.00                                                                              |                                                                                   | 0.13                                                                              | 0.84                                                                              |                                                                                    | 0.45                                                                                |                                                                                     |                                                                                     | 0.49                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 48 (64%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 15.7

Intersection LOS: B

Intersection Capacity Utilization 59.9%

ICU Level of Service B

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road

|                                                                                            |                                                                                          |                                                                                          |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø2 (R) |  Ø1   |  Ø4 |
| 36 s                                                                                       | 14 s                                                                                     | 25 s                                                                                     |
|  Ø6 (R) |  Ø8 |                                                                                          |
| 50 s                                                                                       |                                                                                          | 25 s                                                                                     |



# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Existing Conditions Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (vph)    | 45                                                                                | 358                                                                               | 126                                                                               | 168                                                                               | 647                                                                               | 67                                                                                | 142                                                                                 | 156                                                                                 | 59                                                                                  | 99                                                                                  | 331                                                                                 | 43                                                                                  |
| Future Volume (vph)     | 45                                                                                | 358                                                                               | 126                                                                               | 168                                                                               | 647                                                                               | 67                                                                                | 142                                                                                 | 156                                                                                 | 59                                                                                  | 99                                                                                  | 331                                                                                 | 43                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 11                                                                                | 11                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                  | 11                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 200                                                                               |                                                                                   | 0                                                                                 | 175                                                                               |                                                                                   | 0                                                                                 | 210                                                                                 |                                                                                     | 0                                                                                   | 170                                                                                 |                                                                                     | 0                                                                                   |
| Storage Lanes           | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                   |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 85                                                                                |                                                                                   |                                                                                   | 75                                                                                |                                                                                   |                                                                                   | 100                                                                                 |                                                                                     |                                                                                     | 100                                                                                 |                                                                                     |                                                                                     |
| Lane Util. Factor       | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.961                                                                             |                                                                                   |                                                                                   | 0.986                                                                             |                                                                                   |                                                                                     | 0.959                                                                               |                                                                                     |                                                                                     | 0.983                                                                               |                                                                                     |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1678                                                                              | 3225                                                                              | 0                                                                                 | 1678                                                                              | 3423                                                                              | 0                                                                                 | 1678                                                                                | 1694                                                                                | 0                                                                                   | 1736                                                                                | 1796                                                                                | 0                                                                                   |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.151                                                                               |                                                                                     |                                                                                     | 0.567                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 1678                                                                              | 3225                                                                              | 0                                                                                 | 1678                                                                              | 3423                                                                              | 0                                                                                 | 267                                                                                 | 1694                                                                                | 0                                                                                   | 1036                                                                                | 1796                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | No                                                                                  |
| Satd. Flow (RTOR)       |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 7                                                                                 |                                                                                   |                                                                                     | 11                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 436                                                                               |                                                                                   |                                                                                   | 368                                                                               |                                                                                   |                                                                                     | 438                                                                                 |                                                                                     |                                                                                     | 355                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.9                                                                               |                                                                                   |                                                                                   | 8.4                                                                               |                                                                                   |                                                                                     | 10.0                                                                                |                                                                                     |                                                                                     | 9.7                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                | 0.81                                                                                | 0.81                                                                                | 0.81                                                                                |
| Heavy Vehicles (%)      | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  |
| Adj. Flow (vph)         | 51                                                                                | 407                                                                               | 143                                                                               | 195                                                                               | 752                                                                               | 78                                                                                | 178                                                                                 | 195                                                                                 | 74                                                                                  | 122                                                                                 | 409                                                                                 | 53                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 51                                                                                | 550                                                                               | 0                                                                                 | 195                                                                               | 830                                                                               | 0                                                                                 | 178                                                                                 | 269                                                                                 | 0                                                                                   | 122                                                                                 | 462                                                                                 | 0                                                                                   |
| Turn Type               | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | NA                                                                                |                                                                                   | pm+pt                                                                               | NA                                                                                  |                                                                                     | pm+pt                                                                               | NA                                                                                  |                                                                                     |
| Protected Phases        | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 7                                                                                   | 4                                                                                   |                                                                                     | 3                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 7                                                                                   | 4                                                                                   |                                                                                     | 3                                                                                   | 8                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 15.0                                                                              |                                                                                   | 5.0                                                                               | 15.0                                                                              |                                                                                   | 5.0                                                                                 | 10.0                                                                                |                                                                                     | 5.0                                                                                 | 10.0                                                                                |                                                                                     |
| Minimum Split (s)       | 9.7                                                                               | 21.6                                                                              |                                                                                   | 9.7                                                                               | 21.6                                                                              |                                                                                   | 9.3                                                                                 | 16.8                                                                                |                                                                                     | 9.3                                                                                 | 16.8                                                                                |                                                                                     |
| Total Split (s)         | 17.7                                                                              | 41.6                                                                              |                                                                                   | 17.7                                                                              | 41.6                                                                              |                                                                                   | 22.3                                                                                | 36.8                                                                                |                                                                                     | 22.3                                                                                | 36.8                                                                                |                                                                                     |
| Total Split (%)         | 11.7%                                                                             | 27.5%                                                                             |                                                                                   | 11.7%                                                                             | 27.5%                                                                             |                                                                                   | 14.7%                                                                               | 24.3%                                                                               |                                                                                     | 14.7%                                                                               | 24.3%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.0                                                                               | 4.1                                                                               |                                                                                   | 3.0                                                                               | 4.1                                                                               |                                                                                   | 3.3                                                                                 | 4.4                                                                                 |                                                                                     | 3.3                                                                                 | 4.4                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.7                                                                               | 2.5                                                                               |                                                                                   | 1.7                                                                               | 2.5                                                                               |                                                                                   | 1.0                                                                                 | 2.4                                                                                 |                                                                                     | 1.0                                                                                 | 2.4                                                                                 |                                                                                     |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     | 4.7                                                                               | 6.6                                                                               |                                                                                   | 4.7                                                                               | 6.6                                                                               |                                                                                   | 4.3                                                                                 | 6.8                                                                                 |                                                                                     | 4.3                                                                                 | 6.8                                                                                 |                                                                                     |
| Lead/Lag                | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                                | Lag                                                                                 |                                                                                     | Lead                                                                                | Lag                                                                                 |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                 | Yes                                                                                 |                                                                                     | Yes                                                                                 | Yes                                                                                 |                                                                                     |
| Recall Mode             | None                                                                              | Min                                                                               |                                                                                   | None                                                                              | Min                                                                               |                                                                                   | None                                                                                | None                                                                                |                                                                                     | None                                                                                | None                                                                                |                                                                                     |
| Act Effect Green (s)    | 7.7                                                                               | 27.0                                                                              |                                                                                   | 13.1                                                                              | 34.7                                                                              |                                                                                   | 50.2                                                                                | 34.9                                                                                |                                                                                     | 41.7                                                                                | 30.2                                                                                |                                                                                     |
| Actuated g/C Ratio      | 0.07                                                                              | 0.25                                                                              |                                                                                   | 0.12                                                                              | 0.33                                                                              |                                                                                   | 0.47                                                                                | 0.33                                                                                |                                                                                     | 0.39                                                                                | 0.28                                                                                |                                                                                     |
| v/c Ratio               | 0.42                                                                              | 0.66                                                                              |                                                                                   | 0.95                                                                              | 0.74                                                                              |                                                                                   | 0.58                                                                                | 0.48                                                                                |                                                                                     | 0.26                                                                                | 0.91                                                                                |                                                                                     |
| Control Delay           | 60.0                                                                              | 37.5                                                                              |                                                                                   | 99.0                                                                              | 37.6                                                                              |                                                                                   | 25.7                                                                                | 32.3                                                                                |                                                                                     | 18.9                                                                                | 61.4                                                                                |                                                                                     |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Delay             | 60.0                                                                              | 37.5                                                                              |                                                                                   | 99.0                                                                              | 37.6                                                                              |                                                                                   | 25.7                                                                                | 32.3                                                                                |                                                                                     | 18.9                                                                                | 61.4                                                                                |                                                                                     |
| LOS                     | E                                                                                 | D                                                                                 |                                                                                   | F                                                                                 | D                                                                                 |                                                                                   | C                                                                                   | C                                                                                   |                                                                                     | B                                                                                   | E                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 39.5                                                                              |                                                                                   |                                                                                   | 49.3                                                                              |                                                                                   |                                                                                     | 29.7                                                                                |                                                                                     |                                                                                     | 52.5                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Existing Conditions Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |      |
|-------------------------|------|
| Lane Group              | Ø9   |
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Heavy Vehicles (%)      |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 33.0 |
| Total Split (s)         | 33.0 |
| Total Split (%)         | 22%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Existing Conditions Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  | 35                                                                                | 167                                                                               |                                                                                   | 138                                                                               | 270                                                                               |                                                                                   | 72                                                                                 | 144                                                                                 |                                                                                     | 48                                                                                  | 314                                                                                 |                                                                                     |
| Queue Length 95th (ft)  | 75                                                                                | 228                                                                               |                                                                                   | #287                                                                              | 354                                                                               |                                                                                   | 108                                                                                | 208                                                                                 |                                                                                     | 78                                                                                  | #472                                                                                |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 356                                                                               |                                                                                   |                                                                                   | 288                                                                               |                                                                                   |                                                                                    | 358                                                                                 |                                                                                     |                                                                                     | 275                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 200                                                                               |                                                                                   |                                                                                   | 175                                                                               |                                                                                   |                                                                                   | 210                                                                                |                                                                                     |                                                                                     | 170                                                                                 |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 206                                                                               | 1089                                                                              |                                                                                   | 206                                                                               | 1139                                                                              |                                                                                   | 367                                                                                | 562                                                                                 |                                                                                     | 600                                                                                 | 510                                                                                 |                                                                                     |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       | 0.25                                                                              | 0.51                                                                              |                                                                                   | 0.95                                                                              | 0.73                                                                              |                                                                                   | 0.49                                                                               | 0.48                                                                                |                                                                                     | 0.20                                                                                | 0.91                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 151.4

Actuated Cycle Length: 106.4

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 44.5

Intersection LOS: D

Intersection Capacity Utilization 70.7%

ICU Level of Service C

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)

|                                                                                        |                                                                                        |                                                                                        |                                                                                         |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø9 |  Ø3 |  Ø4 |
| 17.7 s                                                                                 | 41.6 s                                                                                 | 33 s                                                                                   | 22.3 s                                                                                  | 36.8 s                                                                                   |
|  Ø5 |  Ø6 |                                                                                        |  Ø7 |  Ø8 |
| 17.7 s                                                                                 | 41.6 s                                                                                 |                                                                                        | 22.3 s                                                                                  | 36.8 s                                                                                   |



|                         |    |
|-------------------------|----|
| Lane Group              | Ø9 |
| Queue Length 50th (ft)  |    |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & R2017 SR (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |  |
| Traffic Volume (vph)    | 23                                                                                | 445                                                                               | 8                                                                                 | 24                                                                                | 842                                                                               | 40                                                                                | 48                                                                                 | 5                                                                                   | 19                                                                                  | 27                                                                                  | 1                                                                                   | 10                                                                                  |
| Future Volume (vph)     | 23                                                                                | 445                                                                               | 8                                                                                 | 24                                                                                | 842                                                                               | 40                                                                                | 48                                                                                 | 5                                                                                   | 19                                                                                  | 27                                                                                  | 1                                                                                   | 10                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                 | 13                                                                                  | 13                                                                                  | 12                                                                                  | 13                                                                                  | 13                                                                                  |
| Storage Length (ft)     | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 25                                                                                  | 0                                                                                   |                                                                                     | 25                                                                                  |
| Storage Lanes           | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 1                                                                                   | 0                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)       | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                   | 0.993                                                                             |                                                                                   |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected           |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   | 0.999                                                                             |                                                                                   |                                                                                    | 0.957                                                                               |                                                                                     |                                                                                     | 0.954                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3339                                                                              | 0                                                                                 | 0                                                                                 | 3329                                                                              | 0                                                                                 | 0                                                                                  | 1807                                                                                | 1605                                                                                | 0                                                                                   | 1801                                                                                | 1605                                                                                |
| Flt Permitted           |                                                                                   | 0.888                                                                             |                                                                                   |                                                                                   | 0.929                                                                             |                                                                                   |                                                                                    | 0.723                                                                               |                                                                                     |                                                                                     | 0.685                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 2971                                                                              | 0                                                                                 | 0                                                                                 | 3095                                                                              | 0                                                                                 | 0                                                                                  | 1365                                                                                | 1605                                                                                | 0                                                                                   | 1293                                                                                | 1605                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 3                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    |                                                                                     | 157                                                                                 |                                                                                     |                                                                                     | 157                                                                                 |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 442                                                                               |                                                                                   |                                                                                   | 502                                                                               |                                                                                   |                                                                                    | 142                                                                                 |                                                                                     |                                                                                     | 135                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                    | 3.9                                                                                 |                                                                                     |                                                                                     | 3.7                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.80                                                                               | 0.80                                                                                | 0.80                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Heavy Vehicles (%)      | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                 | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  |
| Adj. Flow (vph)         | 29                                                                                | 556                                                                               | 10                                                                                | 27                                                                                | 946                                                                               | 45                                                                                | 60                                                                                 | 6                                                                                   | 24                                                                                  | 30                                                                                  | 1                                                                                   | 11                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 595                                                                               | 0                                                                                 | 0                                                                                 | 1018                                                                              | 0                                                                                 | 0                                                                                  | 66                                                                                  | 24                                                                                  | 0                                                                                   | 31                                                                                  | 11                                                                                  |
| Turn Type               | pm+pt                                                                             | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  | Perm                                                                                | Perm                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases        | 1                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                  |                                                                                     | 4                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   |
| Detector Phase          | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                  | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0                                                                                | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |
| Minimum Split (s)       | 9.0                                                                               | 20.8                                                                              |                                                                                   | 20.8                                                                              | 20.8                                                                              |                                                                                   | 11.0                                                                               | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                |
| Total Split (s)         | 9.0                                                                               | 39.0                                                                              |                                                                                   | 30.0                                                                              | 30.0                                                                              |                                                                                   | 14.0                                                                               | 14.0                                                                                | 14.0                                                                                | 14.0                                                                                | 14.0                                                                                | 14.0                                                                                |
| Total Split (%)         | 12.0%                                                                             | 52.0%                                                                             |                                                                                   | 40.0%                                                                             | 40.0%                                                                             |                                                                                   | 18.7%                                                                              | 18.7%                                                                               | 18.7%                                                                               | 18.7%                                                                               | 18.7%                                                                               | 18.7%                                                                               |
| Yellow Time (s)         | 3.0                                                                               | 4.3                                                                               |                                                                                   | 4.3                                                                               | 4.3                                                                               |                                                                                   | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| All-Red Time (s)        | 1.0                                                                               | 1.5                                                                               |                                                                                   | 1.5                                                                               | 1.5                                                                               |                                                                                   | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     |                                                                                   | 5.8                                                                               |                                                                                   |                                                                                   | 5.8                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 | 4.0                                                                                 |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |
| Lead/Lag                | Lead                                                                              |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               |                                                                                   | Lag                                                                                | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode             | Min                                                                               | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Act Effect Green (s)    |                                                                                   | 58.7                                                                              |                                                                                   |                                                                                   | 49.2                                                                              |                                                                                   |                                                                                    | 8.7                                                                                 | 8.7                                                                                 |                                                                                     | 8.7                                                                                 | 8.7                                                                                 |
| Actuated g/C Ratio      |                                                                                   | 0.78                                                                              |                                                                                   |                                                                                   | 0.66                                                                              |                                                                                   |                                                                                    | 0.12                                                                                | 0.12                                                                                |                                                                                     | 0.12                                                                                | 0.12                                                                                |
| v/c Ratio               |                                                                                   | 0.25                                                                              |                                                                                   |                                                                                   | 0.50                                                                              |                                                                                   |                                                                                    | 0.42                                                                                | 0.07                                                                                |                                                                                     | 0.21                                                                                | 0.03                                                                                |
| Control Delay           |                                                                                   | 3.0                                                                               |                                                                                   |                                                                                   | 6.1                                                                               |                                                                                   |                                                                                    | 38.5                                                                                | 0.4                                                                                 |                                                                                     | 32.5                                                                                | 0.2                                                                                 |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             |                                                                                   | 3.0                                                                               |                                                                                   |                                                                                   | 6.1                                                                               |                                                                                   |                                                                                    | 38.5                                                                                | 0.4                                                                                 |                                                                                     | 32.5                                                                                | 0.2                                                                                 |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | D                                                                                   | A                                                                                   |                                                                                     | C                                                                                   | A                                                                                   |
| Approach Delay          |                                                                                   | 3.0                                                                               |                                                                                   |                                                                                   | 6.1                                                                               |                                                                                   |                                                                                    | 28.4                                                                                |                                                                                     |                                                                                     | 24.0                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & R2017 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

| Lane Group              | Ø3   |
|-------------------------|------|
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Heavy Vehicles (%)      |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 3    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 22.0 |
| Total Split (s)         | 22.0 |
| Total Split (%)         | 29%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                | Lead |
| Lead-Lag Optimize?      | Yes  |
| Recall Mode             | None |
| Act Effect Green (s)    |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |



# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  |                                                                                   | 31                                                                                |                                                                                   |                                                                                   | 62                                                                                |                                                                                   |                                                                                    | 29                                                                                  | 0                                                                                   |                                                                                     | 14                                                                                  | 0                                                                                   |
| Queue Length 95th (ft)  |                                                                                   | 50                                                                                |                                                                                   |                                                                                   | 125                                                                               |                                                                                   |                                                                                    | 56                                                                                  | 0                                                                                   |                                                                                     | 36                                                                                  | 0                                                                                   |
| Internal Link Dist (ft) |                                                                                   | 362                                                                               |                                                                                   |                                                                                   | 422                                                                               |                                                                                   |                                                                                    | 62                                                                                  |                                                                                     |                                                                                     | 55                                                                                  |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |
| Base Capacity (vph)     |                                                                                   | 2344                                                                              |                                                                                   |                                                                                   | 2033                                                                              |                                                                                   |                                                                                    | 188                                                                                 | 357                                                                                 |                                                                                     | 178                                                                                 | 357                                                                                 |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       |                                                                                   | 0.25                                                                              |                                                                                   |                                                                                   | 0.50                                                                              |                                                                                   |                                                                                    | 0.35                                                                                | 0.07                                                                                |                                                                                     | 0.17                                                                                | 0.03                                                                                |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 19 (25%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.50

Intersection Signal Delay: 6.6

Intersection LOS: A

Intersection Capacity Utilization 59.7%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                            |                                                                                        |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø3 |  Ø4 |
| 9 s                                                                                        | 30 s                                                                                       | 22 s                                                                                   | 14 s                                                                                     |
|  Ø6 (R) |                                                                                            |                                                                                        |                                                                                          |
| 39 s                                                                                       |                                                                                            |                                                                                        |                                                                                          |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø3 |
| Queue Length 50th (ft)  |    |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |

# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) 2017 Existing Conditions Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                   |  |  |  |  |                                                                                     |
| Traffic Volume (vph)    | 1                                                                                 | 431                                                                               | 55                                                                                | 51                                                                                | 905                                                                               | 2                                                                                 | 72                                                                                | 2                                                                                   | 29                                                                                  | 2                                                                                   | 2                                                                                   | 1                                                                                   |
| Future Volume (vph)     | 1                                                                                 | 431                                                                               | 55                                                                                | 51                                                                                | 905                                                                               | 2                                                                                 | 72                                                                                | 2                                                                                   | 29                                                                                  | 2                                                                                   | 2                                                                                   | 1                                                                                   |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 10                                                                                  | 10                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                     | 250                                                                                 | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes           | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.983                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | 0.850                                                                               |                                                                                     | 0.962                                                                               |                                                                                     |
| Flt Protected           |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                   | 0.954                                                                               |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3298                                                                              | 0                                                                                 | 0                                                                                 | 3345                                                                              | 0                                                                                 | 0                                                                                 | 1627                                                                                | 1449                                                                                | 1736                                                                                | 1757                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.955                                                                             |                                                                                   |                                                                                   | 0.883                                                                             |                                                                                   |                                                                                   | 0.729                                                                               |                                                                                     | 0.705                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 3150                                                                              | 0                                                                                 | 0                                                                                 | 2963                                                                              | 0                                                                                 | 0                                                                                 | 1243                                                                                | 1449                                                                                | 1288                                                                                | 1757                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 37                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | 111                                                                                 |                                                                                     | 1                                                                                   |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 502                                                                               |                                                                                   |                                                                                   | 407                                                                               |                                                                                   |                                                                                   | 423                                                                                 |                                                                                     |                                                                                     | 198                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                   | 11.5                                                                                |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                |
| Heavy Vehicles (%)      | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  |
| Adj. Flow (vph)         | 1                                                                                 | 539                                                                               | 69                                                                                | 55                                                                                | 984                                                                               | 2                                                                                 | 78                                                                                | 2                                                                                   | 32                                                                                  | 3                                                                                   | 3                                                                                   | 1                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 609                                                                               | 0                                                                                 | 0                                                                                 | 1041                                                                              | 0                                                                                 | 0                                                                                 | 80                                                                                  | 32                                                                                  | 3                                                                                   | 4                                                                                   | 0                                                                                   |
| Turn Type               | pm+pt                                                                             | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                  | Perm                                                                                | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        | 1                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                     | 4                                                                                   | 4                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 3.0                                                                               | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0                                                                               | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 7.3                                                                               | 21.3                                                                              |                                                                                   | 21.3                                                                              | 21.3                                                                              |                                                                                   | 11.9                                                                              | 11.9                                                                                | 11.9                                                                                | 11.9                                                                                | 11.9                                                                                |                                                                                     |
| Total Split (s)         | 7.3                                                                               | 55.0                                                                              |                                                                                   | 47.7                                                                              | 47.7                                                                              |                                                                                   | 20.0                                                                              | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                |                                                                                     |
| Total Split (%)         | 9.7%                                                                              | 73.3%                                                                             |                                                                                   | 63.6%                                                                             | 63.6%                                                                             |                                                                                   | 26.7%                                                                             | 26.7%                                                                               | 26.7%                                                                               | 26.7%                                                                               | 26.7%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.3                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.0                                                                               | 1.3                                                                               |                                                                                   | 1.3                                                                               | 1.3                                                                               |                                                                                   | 1.9                                                                               | 1.9                                                                                 | 1.9                                                                                 | 1.9                                                                                 | 1.9                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 6.3                                                                               |                                                                                   |                                                                                   | 6.3                                                                               |                                                                                   |                                                                                   | 4.9                                                                                 | 4.9                                                                                 | 4.9                                                                                 | 4.9                                                                                 |                                                                                     |
| Lead/Lag                | Lead                                                                              |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | Max                                                                               | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                              | None                                                                                | None                                                                                | None                                                                                | None                                                                                |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 57.0                                                                              |                                                                                   |                                                                                   | 41.4                                                                              |                                                                                   |                                                                                   | 9.2                                                                                 | 9.2                                                                                 | 9.2                                                                                 | 9.2                                                                                 |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.76                                                                              |                                                                                   |                                                                                   | 0.55                                                                              |                                                                                   |                                                                                   | 0.12                                                                                | 0.12                                                                                | 0.12                                                                                | 0.12                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.25                                                                              |                                                                                   |                                                                                   | 0.64                                                                              |                                                                                   |                                                                                   | 0.53                                                                                | 0.12                                                                                | 0.02                                                                                | 0.02                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 2.3                                                                               |                                                                                   |                                                                                   | 6.6                                                                               |                                                                                   |                                                                                   | 42.9                                                                                | 0.9                                                                                 | 27.0                                                                                | 24.7                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 2.3                                                                               |                                                                                   |                                                                                   | 6.6                                                                               |                                                                                   |                                                                                   | 42.9                                                                                | 0.9                                                                                 | 27.0                                                                                | 24.7                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | D                                                                                   | A                                                                                   | C                                                                                   | C                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 2.3                                                                               |                                                                                   |                                                                                   | 6.6                                                                               |                                                                                   |                                                                                   | 30.9                                                                                |                                                                                     |                                                                                     | 25.7                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |



# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) 2017 Existing Conditions Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   | 53                                                                                |                                                                                   |                                                                                    | 36                                                                                  | 0                                                                                   | 1                                                                                   | 1                                                                                   |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 61                                                                                |                                                                                   |                                                                                    | 73                                                                                  | 0                                                                                   | 7                                                                                   | 8                                                                                   |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 422                                                                               |                                                                                   |                                                                                   | 327                                                                               |                                                                                   |                                                                                    | 343                                                                                 |                                                                                     |                                                                                     | 118                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 250                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 2421                                                                              |                                                                                   |                                                                                   | 1635                                                                              |                                                                                   |                                                                                    | 250                                                                                 | 380                                                                                 | 259                                                                                 | 354                                                                                 |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 11                                                                                |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.25                                                                              |                                                                                   |                                                                                   | 0.64                                                                              |                                                                                   |                                                                                    | 0.32                                                                                | 0.08                                                                                | 0.01                                                                                | 0.01                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 21 (28%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 6.7

Intersection LOS: A

Intersection Capacity Utilization 65.6%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                            |                                                                                      |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  |  Ø4 |
| 7.3 s                                                                                      | 47.7 s                                                                                     |                                                                                      | 20 s                                                                                     |
|  Ø6 (R) |                                                                                            |  |                                                                                          |
| 55 s                                                                                       |                                                                                            |                                                                                      |                                                                                          |

## 108: Burroughs Road &amp; Route 58 (Black Rock Turnpike)

## 2017 Existing Conditions

## Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 27                                                                                | 438                                                                               | 8                                                                                 | 5                                                                                 | 909                                                                               | 67                                                                                | 7                                                                                 | 83                                                                                  | 3                                                                                   | 138                                                                                 | 72                                                                                  | 71                                                                                  |
| Future Volume (vph)     | 27                                                                                | 438                                                                               | 8                                                                                 | 5                                                                                 | 909                                                                               | 67                                                                                | 7                                                                                 | 83                                                                                  | 3                                                                                   | 138                                                                                 | 72                                                                                  | 71                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 16                                                                                  | 12                                                                                  | 12                                                                                  | 16                                                                                  | 12                                                                                  |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                   | 0.990                                                                             |                                                                                   |                                                                                   | 0.995                                                                               |                                                                                     |                                                                                     | 0.966                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.996                                                                               |                                                                                     |                                                                                     | 0.976                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3304                                                                              | 0                                                                                 | 0                                                                                 | 3290                                                                              | 0                                                                                 | 0                                                                                 | 2032                                                                                | 0                                                                                   | 0                                                                                   | 1934                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.857                                                                             |                                                                                   |                                                                                   | 0.953                                                                             |                                                                                   |                                                                                   | 0.969                                                                               |                                                                                     |                                                                                     | 0.811                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 2840                                                                              | 0                                                                                 | 0                                                                                 | 3136                                                                              | 0                                                                                 | 0                                                                                 | 1977                                                                                | 0                                                                                   | 0                                                                                   | 1607                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 3                                                                                 |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   | 3                                                                                   |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 407                                                                               |                                                                                   |                                                                                   | 996                                                                               |                                                                                   |                                                                                   | 466                                                                                 |                                                                                     |                                                                                     | 300                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                   | 22.6                                                                              |                                                                                   |                                                                                   | 12.7                                                                                |                                                                                     |                                                                                     | 8.2                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.80                                                                              | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                |
| Heavy Vehicles (%)      | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                  | 5%                                                                                  | 5%                                                                                  | 5%                                                                                  | 5%                                                                                  |
| Adj. Flow (vph)         | 34                                                                                | 548                                                                               | 10                                                                                | 5                                                                                 | 957                                                                               | 71                                                                                | 9                                                                                 | 104                                                                                 | 4                                                                                   | 173                                                                                 | 90                                                                                  | 89                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 592                                                                               | 0                                                                                 | 0                                                                                 | 1033                                                                              | 0                                                                                 | 0                                                                                 | 117                                                                                 | 0                                                                                   | 0                                                                                   | 352                                                                                 | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 6                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 4                                                                                   |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 15.0                                                                              | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 9.0                                                                               | 9.0                                                                                 |                                                                                     | 9.0                                                                                 | 9.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 20.6                                                                              | 20.6                                                                              |                                                                                   | 20.6                                                                              | 20.6                                                                              |                                                                                   | 14.4                                                                              | 14.4                                                                                |                                                                                     | 14.4                                                                                | 14.4                                                                                |                                                                                     |
| Total Split (s)         | 44.0                                                                              | 44.0                                                                              |                                                                                   | 44.0                                                                              | 44.0                                                                              |                                                                                   | 31.0                                                                              | 31.0                                                                                |                                                                                     | 31.0                                                                                | 31.0                                                                                |                                                                                     |
| Total Split (%)         | 58.7%                                                                             | 58.7%                                                                             |                                                                                   | 58.7%                                                                             | 58.7%                                                                             |                                                                                   | 41.3%                                                                             | 41.3%                                                                               |                                                                                     | 41.3%                                                                               | 41.3%                                                                               |                                                                                     |
| Yellow Time (s)         | 4.1                                                                               | 4.1                                                                               |                                                                                   | 4.1                                                                               | 4.1                                                                               |                                                                                   | 3.1                                                                               | 3.1                                                                                 |                                                                                     | 3.1                                                                                 | 3.1                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.5                                                                               | 1.5                                                                               |                                                                                   | 1.5                                                                               | 1.5                                                                               |                                                                                   | 2.3                                                                               | 2.3                                                                                 |                                                                                     | 2.3                                                                                 | 2.3                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   | 5.4                                                                                 |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | C-Max                                                                             | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                              | None                                                                                |                                                                                     | None                                                                                | None                                                                                |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 44.4                                                                              |                                                                                   |                                                                                   | 44.4                                                                              |                                                                                   |                                                                                   | 19.6                                                                                |                                                                                     |                                                                                     | 19.6                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.59                                                                              |                                                                                   |                                                                                   | 0.59                                                                              |                                                                                   |                                                                                   | 0.26                                                                                |                                                                                     |                                                                                     | 0.26                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.35                                                                              |                                                                                   |                                                                                   | 0.56                                                                              |                                                                                   |                                                                                   | 0.23                                                                                |                                                                                     |                                                                                     | 0.80                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 5.7                                                                               |                                                                                   |                                                                                   | 11.6                                                                              |                                                                                   |                                                                                   | 20.5                                                                                |                                                                                     |                                                                                     | 37.7                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 5.7                                                                               |                                                                                   |                                                                                   | 11.6                                                                              |                                                                                   |                                                                                   | 20.5                                                                                |                                                                                     |                                                                                     | 37.7                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 5.7                                                                               |                                                                                   |                                                                                   | 11.6                                                                              |                                                                                   |                                                                                   | 20.5                                                                                |                                                                                     |                                                                                     | 37.7                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 26                                                                                |                                                                                   |                                                                                   | 139                                                                               |                                                                                   |                                                                                   | 41                                                                                  |                                                                                     |                                                                                     | 141                                                                                 |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 32                                                                                |                                                                                   |                                                                                   | 232                                                                               |                                                                                   |                                                                                   | 63                                                                                  |                                                                                     |                                                                                     | 178                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 327                                                                               |                                                                                   |                                                                                   | 916                                                                               |                                                                                   |                                                                                   | 386                                                                                 |                                                                                     |                                                                                     | 220                                                                                 |                                                                                     |

108: Burroughs Road & Route 58 (Black Rock Turnpike)  
Lanes, Volumes, Timings

2017 Existing Conditions  
Timing Plan: Weekday AM Peak

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Turn Bay Length (ft)   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)    |                                                                                   | 1681                                                                              |                                                                                   |                                                                                   | 1861                                                                              |                                                                                   |                                                                                    | 676                                                                                 |                                                                                     |                                                                                     | 564                                                                                 |                                                                                     |
| Starvation Cap Reductn |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   | 0.35                                                                              |                                                                                   |                                                                                   | 0.56                                                                              |                                                                                   |                                                                                    | 0.17                                                                                |                                                                                     |                                                                                     | 0.62                                                                                |                                                                                     |

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 20 (27%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 14.8

Intersection LOS: B

Intersection Capacity Utilization 64.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)

|                                                                                           |                                                                                    |
|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|  Ø2 (R)  |   |
| 44 s                                                                                      | 31 s                                                                               |
|  Ø6 (R) |  |
| 44 s                                                                                      | 31 s                                                                               |



# 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) 201 Rte 150 (Black Rock Turnpike)

## Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | EBR2                                                                              | WBL2                                                                              | WBL                                                                               | WBT                                                                                | WBR                                                                                 | NWL                                                                                 | NWR                                                                                 | NWR2                                                                                | NET                                                                                 |
| Lane Configurations     |                                                                                   |  |  |                                                                                   |                                                                                   |                                                                                   |  |                                                                                     |  |                                                                                     |                                                                                     |  |
| Traffic Volume (vph)    | 1                                                                                 | 229                                                                               | 350                                                                               | 1                                                                                 | 33                                                                                | 2                                                                                 | 552                                                                                | 1                                                                                   | 339                                                                                 | 5                                                                                   | 12                                                                                  | 1                                                                                   |
| Future Volume (vph)     | 1                                                                                 | 229                                                                               | 350                                                                               | 1                                                                                 | 33                                                                                | 2                                                                                 | 552                                                                                | 1                                                                                   | 339                                                                                 | 5                                                                                   | 12                                                                                  | 1                                                                                   |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 11                                                                                 | 12                                                                                  | 10                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                               | 0.95                                                                                | 0.97                                                                                | 0.95                                                                                | 0.95                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 0.993                                                                               |                                                                                     |                                                                                     | 0.910                                                                               |
| Flt Protected           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.997                                                                              |                                                                                     | 0.955                                                                               |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 1827                                                                              | 1553                                                                              | 0                                                                                 | 0                                                                                 | 0                                                                                 | 3345                                                                               | 0                                                                                   | 3137                                                                                | 0                                                                                   | 0                                                                                   | 1662                                                                                |
| Flt Permitted           |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.909                                                                              |                                                                                     | 0.955                                                                               |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 1821                                                                              | 1553                                                                              | 0                                                                                 | 0                                                                                 | 0                                                                                 | 3050                                                                               | 0                                                                                   | 3137                                                                                | 0                                                                                   | 0                                                                                   | 1662                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                    | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |
| Satd. Flow (RTOR)       |                                                                                   |                                                                                   | 57                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 152                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 30                                                                                 |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |
| Link Distance (ft)      |                                                                                   | 996                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 549                                                                                |                                                                                     | 218                                                                                 |                                                                                     |                                                                                     | 653                                                                                 |
| Travel Time (s)         |                                                                                   | 22.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 12.5                                                                               |                                                                                     | 5.0                                                                                 |                                                                                     |                                                                                     | 17.8                                                                                |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.81                                                                              | 0.81                                                                              | 0.81                                                                               | 0.81                                                                                | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                |
| Heavy Vehicles (%)      | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                 | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  |
| Adj. Flow (vph)         | 1                                                                                 | 286                                                                               | 438                                                                               | 1                                                                                 | 41                                                                                | 2                                                                                 | 681                                                                                | 1                                                                                   | 424                                                                                 | 6                                                                                   | 15                                                                                  | 1                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 287                                                                               | 439                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 725                                                                                | 0                                                                                   | 445                                                                                 | 0                                                                                   | 0                                                                                   | 3                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                | pm+ov                                                                             |                                                                                   | Perm                                                                              | Perm                                                                              | NA                                                                                 |                                                                                     | Prot                                                                                |                                                                                     |                                                                                     | NA                                                                                  |
| Protected Phases        |                                                                                   | 2                                                                                 | 4                                                                                 |                                                                                   |                                                                                   |                                                                                   | 2                                                                                  |                                                                                     | 4                                                                                   |                                                                                     |                                                                                     | 5                                                                                   |
| Permitted Phases        | 2                                                                                 |                                                                                   | 2                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector Phase          | 2                                                                                 | 2                                                                                 | 4                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 | 2                                                                                  |                                                                                     | 4                                                                                   |                                                                                     |                                                                                     | 5                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 15.0                                                                              | 15.0                                                                              | 9.0                                                                               |                                                                                   | 15.0                                                                              | 15.0                                                                              | 15.0                                                                               |                                                                                     | 9.0                                                                                 |                                                                                     |                                                                                     | 5.0                                                                                 |
| Minimum Split (s)       | 22.8                                                                              | 22.8                                                                              | 15.4                                                                              |                                                                                   | 22.8                                                                              | 22.8                                                                              | 22.8                                                                               |                                                                                     | 15.4                                                                                |                                                                                     |                                                                                     | 12.6                                                                                |
| Total Split (s)         | 35.8                                                                              | 35.8                                                                              | 33.4                                                                              |                                                                                   | 35.8                                                                              | 35.8                                                                              | 35.8                                                                               |                                                                                     | 33.4                                                                                |                                                                                     |                                                                                     | 19.6                                                                                |
| Total Split (%)         | 40.3%                                                                             | 40.3%                                                                             | 37.6%                                                                             |                                                                                   | 40.3%                                                                             | 40.3%                                                                             | 40.3%                                                                              |                                                                                     | 37.6%                                                                               |                                                                                     |                                                                                     | 22.1%                                                                               |
| Yellow Time (s)         | 4.1                                                                               | 4.1                                                                               | 3.3                                                                               |                                                                                   | 4.1                                                                               | 4.1                                                                               | 4.1                                                                                |                                                                                     | 3.3                                                                                 |                                                                                     |                                                                                     | 3.3                                                                                 |
| All-Red Time (s)        | 3.7                                                                               | 3.7                                                                               | 3.1                                                                               |                                                                                   | 3.7                                                                               | 3.7                                                                               | 3.7                                                                                |                                                                                     | 3.1                                                                                 |                                                                                     |                                                                                     | 4.3                                                                                 |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Total Lost Time (s)     |                                                                                   | 7.8                                                                               | 6.4                                                                               |                                                                                   |                                                                                   |                                                                                   | 7.8                                                                                |                                                                                     | 6.4                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | Min                                                                               | Min                                                                               | None                                                                              |                                                                                   | Min                                                                               | Min                                                                               | Min                                                                                |                                                                                     | None                                                                                |                                                                                     |                                                                                     | None                                                                                |
| Act Effct Green (s)     |                                                                                   | 18.2                                                                              | 42.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 18.2                                                                               |                                                                                     | 10.8                                                                                |                                                                                     |                                                                                     | 5.8                                                                                 |
| Actuated g/C Ratio      |                                                                                   | 0.38                                                                              | 0.87                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.38                                                                               |                                                                                     | 0.22                                                                                |                                                                                     |                                                                                     | 0.12                                                                                |
| v/c Ratio               |                                                                                   | 0.42                                                                              | 0.32                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.63                                                                               |                                                                                     | 0.55                                                                                |                                                                                     |                                                                                     | 0.02                                                                                |
| Control Delay           |                                                                                   | 15.3                                                                              | 3.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 16.8                                                                               |                                                                                     | 15.3                                                                                |                                                                                     |                                                                                     | 25.5                                                                                |
| Queue Delay             |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Total Delay             |                                                                                   | 15.3                                                                              | 3.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 16.8                                                                               |                                                                                     | 15.3                                                                                |                                                                                     |                                                                                     | 25.5                                                                                |
| LOS                     |                                                                                   | B                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                  |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | C                                                                                   |
| Approach Delay          |                                                                                   | 8.0                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 16.8                                                                               |                                                                                     | 15.3                                                                                |                                                                                     |                                                                                     | 25.5                                                                                |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | B                                                                                  |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | C                                                                                   |
| Queue Length 50th (ft)  |                                                                                   | 41                                                                                | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 60                                                                                 |                                                                                     | 26                                                                                  |                                                                                     |                                                                                     | 1                                                                                   |
| Queue Length 95th (ft)  |                                                                                   | 130                                                                               | 78                                                                                |                                                                                   |                                                                                   |                                                                                   | 161                                                                                |                                                                                     | 82                                                                                  |                                                                                     |                                                                                     | 8                                                                                   |
| Internal Link Dist (ft) |                                                                                   | 916                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 469                                                                                |                                                                                     | 138                                                                                 |                                                                                     |                                                                                     | 573                                                                                 |

# 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) 201 R Existing Black Rock Turnpike Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | NER                                                                               | NER2                                                                              | SWL2                                                                              | SWL                                                                               | SWT                                                                               | SWR                                                                               |
| Lane Configurations     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Traffic Volume (vph)    | 1                                                                                 | 1                                                                                 | 1                                                                                 | 16                                                                                | 0                                                                                 | 6                                                                                 |
| Future Volume (vph)     | 1                                                                                 | 1                                                                                 | 1                                                                                 | 16                                                                                | 0                                                                                 | 6                                                                                 |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 12                                                                                | 12                                                                                | 12                                                                                | 15                                                                                | 12                                                                                | 12                                                                                |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.966                                                                             |                                                                                   |
| Flt Protected           |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.964                                                                             |                                                                                   |
| Satd. Flow (prot)       | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1701                                                                              | 0                                                                                 |
| Flt Permitted           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1765                                                                              | 0                                                                                 |
| Right Turn on Red       |                                                                                   | No                                                                                |                                                                                   |                                                                                   |                                                                                   | No                                                                                |
| Satd. Flow (RTOR)       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Link Speed (mph)        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |
| Link Distance (ft)      |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 695                                                                               |                                                                                   |
| Travel Time (s)         |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 19.0                                                                              |                                                                                   |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              |
| Heavy Vehicles (%)      | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                |
| Adj. Flow (vph)         | 1                                                                                 | 1                                                                                 | 1                                                                                 | 17                                                                                | 0                                                                                 | 6                                                                                 |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 24                                                                                | 0                                                                                 |
| Turn Type               |                                                                                   |                                                                                   |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   |
| Protected Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 5                                                                                 |                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   |
| Detector Phase          |                                                                                   |                                                                                   |                                                                                   | 5                                                                                 | 5                                                                                 |                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)     |                                                                                   |                                                                                   |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   |
| Minimum Split (s)       |                                                                                   |                                                                                   |                                                                                   | 12.6                                                                              | 12.6                                                                              |                                                                                   |
| Total Split (s)         |                                                                                   |                                                                                   |                                                                                   | 19.6                                                                              | 19.6                                                                              |                                                                                   |
| Total Split (%)         |                                                                                   |                                                                                   |                                                                                   | 22.1%                                                                             | 22.1%                                                                             |                                                                                   |
| Yellow Time (s)         |                                                                                   |                                                                                   |                                                                                   | 3.3                                                                               | 3.3                                                                               |                                                                                   |
| All-Red Time (s)        |                                                                                   |                                                                                   |                                                                                   | 4.3                                                                               | 4.3                                                                               |                                                                                   |
| Lost Time Adjust (s)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |
| Total Lost Time (s)     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Recall Mode             |                                                                                   |                                                                                   |                                                                                   | None                                                                              | None                                                                              |                                                                                   |
| Act Effct Green (s)     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 5.8                                                                               |                                                                                   |
| Actuated g/C Ratio      |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.12                                                                              |                                                                                   |
| v/c Ratio               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.11                                                                              |                                                                                   |
| Control Delay           |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 26.0                                                                              |                                                                                   |
| Queue Delay             |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |
| Total Delay             |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 26.0                                                                              |                                                                                   |
| LOS                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |
| Approach Delay          |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 26.0                                                                              |                                                                                   |
| Approach LOS            |                                                                                   |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |
| Queue Length 50th (ft)  |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 5                                                                                 |                                                                                   |
| Queue Length 95th (ft)  |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |
| Internal Link Dist (ft) |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 615                                                                               |                                                                                   |

109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)

Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | EBR2                                                                              | WBL2                                                                              | WBL                                                                               | WBT                                                                                | WBR                                                                                 | NWL                                                                                 | NWR                                                                                 | NWR2                                                                                | NET                                                                                 |
| Turn Bay Length (ft)   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)    |                                                                                   | 1122                                                                              | 1493                                                                              |                                                                                   |                                                                                   |                                                                                   | 1879                                                                               |                                                                                     | 1926                                                                                |                                                                                     |                                                                                     | 439                                                                                 |
| Starvation Cap Reductn |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Reduced v/c Ratio      |                                                                                   | 0.26                                                                              | 0.29                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.39                                                                               |                                                                                     | 0.23                                                                                |                                                                                     |                                                                                     | 0.01                                                                                |

Intersection Summary

|                                   |                        |
|-----------------------------------|------------------------|
| Area Type:                        | Other                  |
| Cycle Length:                     | 88.8                   |
| Actuated Cycle Length:            | 48.5                   |
| Natural Cycle:                    | 60                     |
| Control Type:                     | Actuated-Uncoordinated |
| Maximum v/c Ratio:                | 0.63                   |
| Intersection Signal Delay:        | 13.2                   |
| Intersection Capacity Utilization | 71.7%                  |
| Intersection LOS:                 | B                      |
| ICU Level of Service              | C                      |
| Analysis Period (min)             | 15                     |

Splits and Phases: 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)/Route 58 (Tunxis Hill Cut

|                                                                                      |                                                                                      |                                                                                        |
|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
|  Ø2 |  Ø4 |  Ø5 |
| 35.8 s                                                                               | 33.4 s                                                                               | 19.6 s                                                                                 |



|                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                        |  |  |  |  |  |  |
| Lane Group             | NER                                                                               | NER2                                                                              | SWL2                                                                              | SWL                                                                               | SWT                                                                               | SWR                                                                               |
| Turn Bay Length (ft)   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Base Capacity (vph)    | 466                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Starvation Cap Reductn | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Storage Cap Reductn    | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Reduced v/c Ratio      | 0.05                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

201: Tunxis Hill Road & Route 58 (Tunxis Hill Cutoff)  
Lanes, Volumes, Timings

2017 Existing Conditions  
Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |  |
| Traffic Volume (vph)    | 256                                                                               | 2                                                                                 | 60                                                                                | 598                                                                               | 0                                                                                 | 58                                                                                |
| Future Volume (vph)     | 256                                                                               | 2                                                                                 | 60                                                                                | 598                                                                               | 0                                                                                 | 58                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 10                                                                                | 10                                                                                |
| Storage Length (ft)     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 50                                                                                |
| Storage Lanes           |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |
| Taper Length (ft)       |                                                                                   |                                                                                   | 25                                                                                |                                                                                   | 25                                                                                |                                                                                   |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.999                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |
| Flt Protected           |                                                                                   |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 3352                                                                              | 0                                                                                 | 0                                                                                 | 1757                                                                              | 1705                                                                              | 1449                                                                              |
| Flt Permitted           |                                                                                   |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 3352                                                                              | 0                                                                                 | 0                                                                                 | 1757                                                                              | 1705                                                                              | 1449                                                                              |
| Link Speed (mph)        | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                | 25                                                                                |                                                                                   |
| Link Distance (ft)      | 1095                                                                              |                                                                                   |                                                                                   | 214                                                                               | 782                                                                               |                                                                                   |
| Travel Time (s)         | 24.9                                                                              |                                                                                   |                                                                                   | 4.9                                                                               | 21.3                                                                              |                                                                                   |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.91                                                                              | 0.91                                                                              | 0.80                                                                              | 0.80                                                                              |
| Heavy Vehicles (%)      | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                |
| Adj. Flow (vph)         | 320                                                                               | 3                                                                                 | 66                                                                                | 657                                                                               | 0                                                                                 | 73                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 323                                                                               | 0                                                                                 | 0                                                                                 | 723                                                                               | 0                                                                                 | 73                                                                                |
| Sign Control            | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 48.6% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1.1

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↑↑   |      |      | ↑    | ↑    | ↑    |
| Traffic Vol, veh/h       | 256  | 2    | 60   | 598  | 0    | 58   |
| Future Vol, veh/h        | 256  | 2    | 60   | 598  | 0    | 58   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | 0    | 50   |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 80   | 80   | 91   | 91   | 80   | 80   |
| Heavy Vehicles, %        | 4    | 4    | 4    | 4    | 4    | 4    |
| Mvmt Flow                | 320  | 3    | 66   | 657  | 0    | 73   |

| Major/Minor          | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0      | 0      | 323    |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Critical Hdwy        | -      | -      | 4.16   |
| Critical Hdwy Stg 1  | -      | -      | -      |
| Critical Hdwy Stg 2  | -      | -      | -      |
| Follow-up Hdwy       | -      | -      | 2.238  |
| Pot Cap-1 Maneuver   | -      | -      | 1222   |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | -      | -      | 1222   |
| Mov Cap-2 Maneuver   | -      | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |

| Approach             | EB | WB  | NB  |
|----------------------|----|-----|-----|
| HCM Control Delay, s | 0  | 0.7 | 9.6 |
| HCM LOS              |    |     | A   |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | -     | 850   | -   | -   | 1222  | -   |
| HCM Lane V/C Ratio    | -     | 0.085 | -   | -   | 0.054 | -   |
| HCM Control Delay (s) | 0     | 9.6   | -   | -   | 8.1   | 0   |
| HCM Lane LOS          | A     | A     | -   | -   | A     | A   |
| HCM 95th %tile Q(veh) | -     | 0.3   | -   | -   | 0.2   | -   |



202: Route 732 (Black Rock Turnpike) & Judd Street  
Lanes, Volumes, Timings

2017 Existing Conditions  
Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (vph)    | 19                                                                                | 64                                                                                | 72                                                                                | 337                                                                               | 372                                                                               | 28                                                                                |
| Future Volume (vph)     | 19                                                                                | 64                                                                                | 72                                                                                | 337                                                                               | 372                                                                               | 28                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Storage Length (ft)     | 0                                                                                 | 0                                                                                 | 25                                                                                |                                                                                   |                                                                                   | 0                                                                                 |
| Storage Lanes           | 1                                                                                 | 0                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 25                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.896                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.991                                                                             |                                                                                   |
| Flt Protected           | 0.989                                                                             |                                                                                   |                                                                                   | 0.991                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1817                                                                              | 0                                                                                 | 0                                                                                 | 3407                                                                              | 1793                                                                              | 0                                                                                 |
| Flt Permitted           | 0.989                                                                             |                                                                                   |                                                                                   | 0.991                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1817                                                                              | 0                                                                                 | 0                                                                                 | 3407                                                                              | 1793                                                                              | 0                                                                                 |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 586                                                                               |                                                                                   |                                                                                   | 395                                                                               | 218                                                                               |                                                                                   |
| Travel Time (s)         | 16.0                                                                              |                                                                                   |                                                                                   | 9.0                                                                               | 5.0                                                                               |                                                                                   |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |
| Heavy Vehicles (%)      | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                |
| Adj. Flow (vph)         | 24                                                                                | 80                                                                                | 78                                                                                | 366                                                                               | 404                                                                               | 30                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 104                                                                               | 0                                                                                 | 0                                                                                 | 444                                                                               | 434                                                                               | 0                                                                                 |
| Sign Control            | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 47.7% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 2.2

| Movement                 | EBL                                                                               | EBR  | NBL  | NBT                                                                               | SBT                                                                               | SBR  |
|--------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |  |      |      |  |  |      |
| Traffic Vol, veh/h       | 19                                                                                | 64   | 72   | 337                                                                               | 372                                                                               | 28   |
| Future Vol, veh/h        | 19                                                                                | 64   | 72   | 337                                                                               | 372                                                                               | 28   |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0    | 0                                                                                 | 0                                                                                 | 0    |
| Sign Control             | Stop                                                                              | Stop | Free | Free                                                                              | Free                                                                              | Free |
| RT Channelized           | -                                                                                 | None | -    | None                                                                              | -                                                                                 | None |
| Storage Length           | 0                                                                                 | -    | 25   | -                                                                                 | -                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 80                                                                                | 80   | 92   | 92                                                                                | 92                                                                                | 92   |
| Heavy Vehicles, %        | 5                                                                                 | 5    | 5    | 5                                                                                 | 5                                                                                 | 5    |
| Mvmt Flow                | 24                                                                                | 80   | 78   | 366                                                                               | 404                                                                               | 30   |

| Major/Minor          | Minor2 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 760    | 420    | 435    |
| Stage 1              | 420    | -      | -      |
| Stage 2              | 340    | -      | -      |
| Critical Hdwy        | 6.675  | 6.275  | 4.175  |
| Critical Hdwy Stg 1  | 5.475  | -      | -      |
| Critical Hdwy Stg 2  | 5.875  | -      | -      |
| Follow-up Hdwy       | 3.5475 | 3.3475 | 2.2475 |
| Pot Cap-1 Maneuver   | 352    | 625    | 1104   |
| Stage 1              | 654    | -      | -      |
| Stage 2              | 686    | -      | -      |
| Platoon blocked, %   |        |        |        |
| Mov Cap-1 Maneuver   | 321    | 625    | 1104   |
| Mov Cap-2 Maneuver   | 321    | -      | -      |
| Stage 1              | 654    | -      | -      |
| Stage 2              | 625    | -      | -      |

| Approach             | EB   | NB  | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 13.8 | 1.7 | 0  |
| HCM LOS              | B    |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1104  | -   | 514   | -   | -   |
| HCM Lane V/C Ratio    | 0.071 | -   | 0.202 | -   | -   |
| HCM Control Delay (s) | 8.5   | 0.3 | 13.8  | -   | -   |
| HCM Lane LOS          | A     | A   | B     | -   | -   |
| HCM 95th %tile Q(veh) | 0.2   | -   | 0.7   | -   | -   |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahoe Drive Existing Conditions Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 6                                                                                 | 0                                                                                 | 1                                                                                 | 43                                                                                | 0                                                                                 | 44                                                                                | 5                                                                                  | 625                                                                                 | 59                                                                                  | 55                                                                                  | 684                                                                                 | 5                                                                                   |
| Future Volume (vph)     | 6                                                                                 | 0                                                                                 | 1                                                                                 | 43                                                                                | 0                                                                                 | 44                                                                                | 5                                                                                  | 625                                                                                 | 59                                                                                  | 55                                                                                  | 684                                                                                 | 5                                                                                   |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                 | 13                                                                                  | 12                                                                                  | 12                                                                                  | 13                                                                                  | 12                                                                                  |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.985                                                                             |                                                                                   |                                                                                   | 0.932                                                                             |                                                                                   |                                                                                    | 0.988                                                                               |                                                                                     |                                                                                     | 0.999                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.957                                                                             |                                                                                   |                                                                                   | 0.976                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.996                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 1990                                                                              | 0                                                                                 | 0                                                                                 | 1920                                                                              | 0                                                                                 | 0                                                                                  | 1902                                                                                | 0                                                                                   | 0                                                                                   | 1915                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.844                                                                             |                                                                                   |                                                                                   | 0.839                                                                             |                                                                                   |                                                                                    | 0.996                                                                               |                                                                                     |                                                                                     | 0.915                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 1755                                                                              | 0                                                                                 | 0                                                                                 | 1651                                                                              | 0                                                                                 | 0                                                                                  | 1894                                                                                | 0                                                                                   | 0                                                                                   | 1759                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 43                                                                                |                                                                                   |                                                                                   | 52                                                                                |                                                                                   |                                                                                    | 14                                                                                  |                                                                                     |                                                                                     | 1                                                                                   |                                                                                     |
| Link Speed (mph)        |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 35                                                                                  |                                                                                     |                                                                                     | 35                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 378                                                                               |                                                                                   |                                                                                   | 442                                                                               |                                                                                   |                                                                                    | 1898                                                                                |                                                                                     |                                                                                     | 522                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 10.3                                                                              |                                                                                   |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                    | 37.0                                                                                |                                                                                     |                                                                                     | 10.2                                                                                |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.84                                                                              | 0.84                                                                              | 0.84                                                                              | 0.95                                                                               | 0.95                                                                                | 0.95                                                                                | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                |
| Adj. Flow (vph)         | 8                                                                                 | 0                                                                                 | 1                                                                                 | 51                                                                                | 0                                                                                 | 52                                                                                | 5                                                                                  | 658                                                                                 | 62                                                                                  | 59                                                                                  | 728                                                                                 | 5                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 9                                                                                 | 0                                                                                 | 0                                                                                 | 103                                                                               | 0                                                                                 | 0                                                                                  | 725                                                                                 | 0                                                                                   | 0                                                                                   | 792                                                                                 | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                    | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Permitted Phases        | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   | 2                                                                                  |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 4                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |                                                                                   | 2                                                                                  | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 15.0                                                                               | 15.0                                                                                |                                                                                     | 15.0                                                                                | 15.0                                                                                |                                                                                     |
| Minimum Split (s)       | 11.7                                                                              | 11.7                                                                              |                                                                                   | 11.7                                                                              | 11.7                                                                              |                                                                                   | 20.6                                                                               | 20.6                                                                                |                                                                                     | 20.6                                                                                | 20.6                                                                                |                                                                                     |
| Total Split (s)         | 17.7                                                                              | 17.7                                                                              |                                                                                   | 17.7                                                                              | 17.7                                                                              |                                                                                   | 48.6                                                                               | 48.6                                                                                |                                                                                     | 48.6                                                                                | 48.6                                                                                |                                                                                     |
| Total Split (%)         | 26.7%                                                                             | 26.7%                                                                             |                                                                                   | 26.7%                                                                             | 26.7%                                                                             |                                                                                   | 73.3%                                                                              | 73.3%                                                                               |                                                                                     | 73.3%                                                                               | 73.3%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.3                                                                               | 3.3                                                                               |                                                                                   | 3.3                                                                               | 3.3                                                                               |                                                                                   | 4.0                                                                                | 4.0                                                                                 |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.4                                                                               | 1.4                                                                               |                                                                                   | 1.4                                                                               | 1.4                                                                               |                                                                                   | 1.6                                                                                | 1.6                                                                                 |                                                                                     | 1.6                                                                                 | 1.6                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                    | 5.6                                                                                 |                                                                                     |                                                                                     | 5.6                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              |                                                                                   | Min                                                                                | Min                                                                                 |                                                                                     | Min                                                                                 | Min                                                                                 |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 7.8                                                                               |                                                                                   |                                                                                   | 7.8                                                                               |                                                                                   |                                                                                    | 33.7                                                                                |                                                                                     |                                                                                     | 33.7                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.16                                                                              |                                                                                   |                                                                                   | 0.16                                                                              |                                                                                   |                                                                                    | 0.71                                                                                |                                                                                     |                                                                                     | 0.71                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.03                                                                              |                                                                                   |                                                                                   | 0.33                                                                              |                                                                                   |                                                                                    | 0.54                                                                                |                                                                                     |                                                                                     | 0.64                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 0.1                                                                               |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                    | 6.7                                                                                 |                                                                                     |                                                                                     | 8.6                                                                                 |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 0.1                                                                               |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                    | 6.7                                                                                 |                                                                                     |                                                                                     | 8.6                                                                                 |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 0.1                                                                               |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                    | 6.7                                                                                 |                                                                                     |                                                                                     | 8.6                                                                                 |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 10                                                                                |                                                                                   |                                                                                    | 90                                                                                  |                                                                                     |                                                                                     | 113                                                                                 |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 50                                                                                |                                                                                   |                                                                                    | 190                                                                                 |                                                                                     |                                                                                     | 249                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 298                                                                               |                                                                                   |                                                                                   | 362                                                                               |                                                                                   |                                                                                    | 1818                                                                                |                                                                                     |                                                                                     | 442                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

2017 Existing Conditions

Timing Plan: Weekday Midday P

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Base Capacity (vph)    |                                                                                   | 528                                                                               |                                                                                   |                                                                                   | 505                                                                               |                                                                                   |                                                                                    | 1688                                                                                |                                                                                     |                                                                                     | 1566                                                                                |                                                                                     |
| Starvation Cap Reductn |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   | 0.02                                                                              |                                                                                   |                                                                                   | 0.20                                                                              |                                                                                   |                                                                                    | 0.43                                                                                |                                                                                     |                                                                                     | 0.51                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 66.3

Actuated Cycle Length: 47.6

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 8.1

Intersection LOS: A

Intersection Capacity Utilization 88.5%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

|                                                                                      |                                                                                        |
|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
|  Ø2 |  Ø4 |
| 48.6 s                                                                               | 17.7 s                                                                                 |
|  Ø6 |  Ø8 |
| 48.6 s                                                                               | 17.7 s                                                                                 |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

## Lanes, Volumes, Timings

2017 Existing Conditions

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |      |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3   |
| Lane Configurations     |  |  |  |  |  |  |      |
| Traffic Volume (vph)    | 76                                                                                | 167                                                                               | 163                                                                               | 624                                                                               | 663                                                                               | 68                                                                                |      |
| Future Volume (vph)     | 76                                                                                | 167                                                                               | 163                                                                               | 624                                                                               | 663                                                                               | 68                                                                                |      |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |      |
| Lane Width (ft)         | 10                                                                                | 10                                                                                | 11                                                                                | 11                                                                                | 12                                                                                | 12                                                                                |      |
| Storage Length (ft)     | 0                                                                                 | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   | 0                                                                                 |      |
| Storage Lanes           | 1                                                                                 | 1                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |      |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              |      |
| Frt                     |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.986                                                                             |                                                                                   |      |
| Flt Protected           | 0.950                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |      |
| Satd. Flow (prot)       | 1636                                                                              | 1463                                                                              | 1694                                                                              | 1783                                                                              | 3456                                                                              | 0                                                                                 |      |
| Flt Permitted           | 0.950                                                                             |                                                                                   | 0.309                                                                             |                                                                                   |                                                                                   |                                                                                   |      |
| Satd. Flow (perm)       | 1636                                                                              | 1463                                                                              | 551                                                                               | 1783                                                                              | 3456                                                                              | 0                                                                                 |      |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |      |
| Satd. Flow (RTOR)       |                                                                                   | 204                                                                               |                                                                                   |                                                                                   | 13                                                                                |                                                                                   |      |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 35                                                                                |                                                                                   |      |
| Link Distance (ft)      | 445                                                                               |                                                                                   |                                                                                   | 510                                                                               | 341                                                                               |                                                                                   |      |
| Travel Time (s)         | 12.1                                                                              |                                                                                   |                                                                                   | 11.6                                                                              | 6.6                                                                               |                                                                                   |      |
| Peak Hour Factor        | 0.82                                                                              | 0.82                                                                              | 0.86                                                                              | 0.86                                                                              | 0.97                                                                              | 0.97                                                                              |      |
| Heavy Vehicles (%)      | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                |      |
| Adj. Flow (vph)         | 93                                                                                | 204                                                                               | 190                                                                               | 726                                                                               | 684                                                                               | 70                                                                                |      |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Group Flow (vph)   | 93                                                                                | 204                                                                               | 190                                                                               | 726                                                                               | 754                                                                               | 0                                                                                 |      |
| Turn Type               | Prot                                                                              | Perm                                                                              | pm+pt                                                                             | NA                                                                                | NA                                                                                |                                                                                   |      |
| Protected Phases        | 4                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 | 2                                                                                 |                                                                                   | 3    |
| Permitted Phases        |                                                                                   | 4                                                                                 | 6                                                                                 |                                                                                   |                                                                                   |                                                                                   |      |
| Detector Phase          | 4                                                                                 | 4                                                                                 | 1                                                                                 | 6                                                                                 | 2                                                                                 |                                                                                   |      |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               | 5.0                                                                               | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0  |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              | 9.2                                                                               | 21.9                                                                              | 21.9                                                                              |                                                                                   | 22.0 |
| Total Split (s)         | 21.9                                                                              | 21.9                                                                              | 9.2                                                                               | 31.1                                                                              | 21.9                                                                              |                                                                                   | 22.0 |
| Total Split (%)         | 29.2%                                                                             | 29.2%                                                                             | 12.3%                                                                             | 41.5%                                                                             | 29.2%                                                                             |                                                                                   | 29%  |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               | 3.2                                                                               | 4.9                                                                               | 4.9                                                                               |                                                                                   | 4.0  |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 2.0                                                                               | 2.0                                                                               |                                                                                   | 0.0  |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               | 4.2                                                                               | 6.9                                                                               | 6.9                                                                               |                                                                                   |      |
| Lead/Lag                | Lag                                                                               | Lag                                                                               | Lead                                                                              |                                                                                   | Lag                                                                               |                                                                                   | Lead |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               |                                                                                   | Yes  |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                             | C-Max                                                                             |                                                                                   | None |
| Act Effect Green (s)    | 10.0                                                                              | 10.0                                                                              | 56.8                                                                              | 54.1                                                                              | 40.9                                                                              |                                                                                   |      |
| Actuated g/C Ratio      | 0.13                                                                              | 0.13                                                                              | 0.76                                                                              | 0.72                                                                              | 0.55                                                                              |                                                                                   |      |
| v/c Ratio               | 0.43                                                                              | 0.55                                                                              | 0.34                                                                              | 0.56                                                                              | 0.40                                                                              |                                                                                   |      |
| Control Delay           | 35.9                                                                              | 10.8                                                                              | 6.9                                                                               | 14.5                                                                              | 11.1                                                                              |                                                                                   |      |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Total Delay             | 35.9                                                                              | 10.8                                                                              | 6.9                                                                               | 14.5                                                                              | 11.1                                                                              |                                                                                   |      |
| LOS                     | D                                                                                 | B                                                                                 | A                                                                                 | B                                                                                 | B                                                                                 |                                                                                   |      |
| Approach Delay          | 18.7                                                                              |                                                                                   |                                                                                   | 12.9                                                                              | 11.1                                                                              |                                                                                   |      |
| Approach LOS            | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 | B                                                                                 |                                                                                   |      |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive Lanes, Volumes, Timings

2017 Existing Conditions  
Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |    |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3 |
| Queue Length 50th (ft)  | 41                                                                                | 0                                                                                 | 30                                                                                | 275                                                                               | 92                                                                                |                                                                                   |    |
| Queue Length 95th (ft)  | 72                                                                                | 41                                                                                | 62                                                                                | 405                                                                               | 159                                                                               |                                                                                   |    |
| Internal Link Dist (ft) | 365                                                                               |                                                                                   |                                                                                   | 430                                                                               | 261                                                                               |                                                                                   |    |
| Turn Bay Length (ft)    |                                                                                   | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   |                                                                                   |    |
| Base Capacity (vph)     | 390                                                                               | 504                                                                               | 555                                                                               | 1286                                                                              | 1888                                                                              |                                                                                   |    |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Reduced v/c Ratio       | 0.24                                                                              | 0.40                                                                              | 0.34                                                                              | 0.56                                                                              | 0.40                                                                              |                                                                                   |    |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 22 (29%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 13.1

Intersection LOS: B

Intersection Capacity Utilization 49.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

|                                                                                            |                                                                                            |                                                                                        |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø3 |  Ø4 |
| 9.2 s                                                                                      | 21.9 s                                                                                     | 22 s                                                                                   | 21.9 s                                                                                   |
|  Ø6 (R) |                                                                                            |                                                                                        |                                                                                          |
| 31.1 s                                                                                     |                                                                                            |                                                                                        |                                                                                          |



# 103: Route 58 (Black Rock Turnpike) & Brookside Drive

## Lanes, Volumes, Timings

2017 Existing Conditions

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (vph)    | 64                                                                                | 46                                                                                | 51                                                                                | 724                                                                               | 748                                                                               | 84                                                                                |
| Future Volume (vph)     | 64                                                                                | 46                                                                                | 51                                                                                | 724                                                                               | 748                                                                               | 84                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              |
| Frt                     | 0.944                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.985                                                                             |                                                                                   |
| Flt Protected           | 0.972                                                                             |                                                                                   |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1918                                                                              | 0                                                                                 | 0                                                                                 | 3494                                                                              | 3452                                                                              | 0                                                                                 |
| Flt Permitted           | 0.972                                                                             |                                                                                   |                                                                                   | 0.842                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1918                                                                              | 0                                                                                 | 0                                                                                 | 2951                                                                              | 3452                                                                              | 0                                                                                 |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |
| Satd. Flow (RTOR)       | 48                                                                                |                                                                                   |                                                                                   |                                                                                   | 19                                                                                |                                                                                   |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 347                                                                               |                                                                                   |                                                                                   | 293                                                                               | 336                                                                               |                                                                                   |
| Travel Time (s)         | 9.5                                                                               |                                                                                   |                                                                                   | 6.7                                                                               | 7.6                                                                               |                                                                                   |
| Peak Hour Factor        | 0.86                                                                              | 0.86                                                                              | 0.83                                                                              | 0.83                                                                              | 0.98                                                                              | 0.98                                                                              |
| Heavy Vehicles (%)      | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                |
| Adj. Flow (vph)         | 74                                                                                | 53                                                                                | 61                                                                                | 872                                                                               | 763                                                                               | 86                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 127                                                                               | 0                                                                                 | 0                                                                                 | 933                                                                               | 849                                                                               | 0                                                                                 |
| Turn Type               | Prot                                                                              |                                                                                   | pm+pt                                                                             | NA                                                                                | NA                                                                                |                                                                                   |
| Protected Phases        | 4                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                 | 6                                                                                 |                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Detector Phase          | 4                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                 | 6                                                                                 |                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)     | 9.0                                                                               |                                                                                   | 3.0                                                                               | 15.0                                                                              | 15.0                                                                              |                                                                                   |
| Minimum Split (s)       | 13.0                                                                              |                                                                                   | 8.9                                                                               | 20.4                                                                              | 20.4                                                                              |                                                                                   |
| Total Split (s)         | 25.0                                                                              |                                                                                   | 14.0                                                                              | 50.0                                                                              | 36.0                                                                              |                                                                                   |
| Total Split (%)         | 33.3%                                                                             |                                                                                   | 18.7%                                                                             | 66.7%                                                                             | 48.0%                                                                             |                                                                                   |
| Yellow Time (s)         | 3.0                                                                               |                                                                                   | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               |                                                                                   |
| All-Red Time (s)        | 1.0                                                                               |                                                                                   | 1.7                                                                               | 1.2                                                                               | 1.2                                                                               |                                                                                   |
| Lost Time Adjust (s)    | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |
| Total Lost Time (s)     | 4.0                                                                               |                                                                                   |                                                                                   | 5.4                                                                               | 5.4                                                                               |                                                                                   |
| Lead/Lag                |                                                                                   |                                                                                   | Lag                                                                               |                                                                                   | Lead                                                                              |                                                                                   |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   | Yes                                                                               |                                                                                   |
| Recall Mode             | None                                                                              |                                                                                   | None                                                                              | C-Max                                                                             | C-Max                                                                             |                                                                                   |
| Act Effect Green (s)    | 9.5                                                                               |                                                                                   |                                                                                   | 59.7                                                                              | 59.7                                                                              |                                                                                   |
| Actuated g/C Ratio      | 0.13                                                                              |                                                                                   |                                                                                   | 0.80                                                                              | 0.80                                                                              |                                                                                   |
| v/c Ratio               | 0.45                                                                              |                                                                                   |                                                                                   | 0.40                                                                              | 0.31                                                                              |                                                                                   |
| Control Delay           | 24.7                                                                              |                                                                                   |                                                                                   | 2.7                                                                               | 1.6                                                                               |                                                                                   |
| Queue Delay             | 0.0                                                                               |                                                                                   |                                                                                   | 0.1                                                                               | 0.0                                                                               |                                                                                   |
| Total Delay             | 24.7                                                                              |                                                                                   |                                                                                   | 2.9                                                                               | 1.6                                                                               |                                                                                   |
| LOS                     | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |
| Approach Delay          | 24.7                                                                              |                                                                                   |                                                                                   | 2.9                                                                               | 1.6                                                                               |                                                                                   |
| Approach LOS            | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |
| Queue Length 50th (ft)  | 34                                                                                |                                                                                   |                                                                                   | 26                                                                                | 8                                                                                 |                                                                                   |
| Queue Length 95th (ft)  | 75                                                                                |                                                                                   |                                                                                   | 56                                                                                | 8                                                                                 |                                                                                   |
| Internal Link Dist (ft) | 267                                                                               |                                                                                   |                                                                                   | 213                                                                               | 256                                                                               |                                                                                   |

# 103: Route 58 (Black Rock Turnpike) & Brookside Drive Lanes, Volumes, Timings

2017 Existing Conditions

Timing Plan: Weekday Midday P

|                        |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Turn Bay Length (ft)   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Base Capacity (vph)    | 571                                                                               |                                                                                   |                                                                                   | 2350                                                                              | 2753                                                                              |                                                                                   |
| Starvation Cap Reductn | 0                                                                                 |                                                                                   |                                                                                   | 400                                                                               | 0                                                                                 |                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 65                                                                                |                                                                                   |
| Storage Cap Reductn    | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |
| Reduced v/c Ratio      | 0.22                                                                              |                                                                                   |                                                                                   | 0.48                                                                              | 0.32                                                                              |                                                                                   |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 45 (60%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 3.7

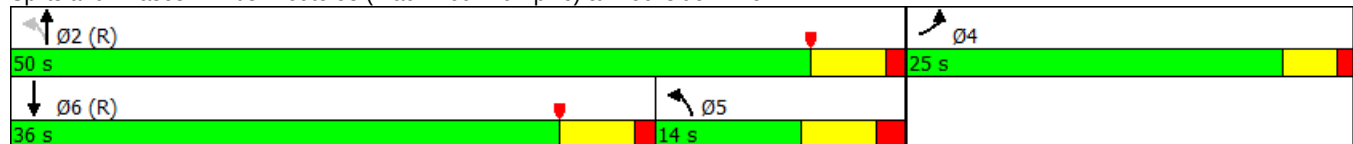
Intersection LOS: A

Intersection Capacity Utilization 64.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive



# 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield 2017 Existing Conditions Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |  |                                                                                   |  |  |                                                                                    |  |  |                                                                                     |  |  |
| Traffic Volume (vph)    | 14                                                                                | 3                                                                                 | 31                                                                                | 61                                                                                | 4                                                                                 | 141                                                                               | 29                                                                                 | 636                                                                                 | 51                                                                                  | 83                                                                                  | 691                                                                                 | 21                                                                                  |
| Future Volume (vph)     | 14                                                                                | 3                                                                                 | 31                                                                                | 61                                                                                | 4                                                                                 | 141                                                                               | 29                                                                                 | 636                                                                                 | 51                                                                                  | 83                                                                                  | 691                                                                                 | 21                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                 | 11                                                                                  | 12                                                                                  | 12                                                                                  | 11                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 75                                                                                | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes           | 0                                                                                 |                                                                                   | 1                                                                                 | 0                                                                                 |                                                                                   | 1                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                               | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Frt                     |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                    | 0.989                                                                               |                                                                                     |                                                                                     | 0.996                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.961                                                                             |                                                                                   |                                                                                   | 0.955                                                                             |                                                                                   |                                                                                    | 0.998                                                                               |                                                                                     |                                                                                     | 0.995                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 1790                                                                              | 1583                                                                              | 0                                                                                 | 1779                                                                              | 1531                                                                              | 0                                                                                  | 3377                                                                                | 0                                                                                   | 0                                                                                   | 3391                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.805                                                                             |                                                                                   |                                                                                   | 0.728                                                                             |                                                                                   |                                                                                    | 0.899                                                                               |                                                                                     |                                                                                     | 0.783                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 1500                                                                              | 1583                                                                              | 0                                                                                 | 1356                                                                              | 1531                                                                              | 0                                                                                  | 3042                                                                                | 0                                                                                   | 0                                                                                   | 2668                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | No                                                                                |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   |                                                                                   | 128                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 13                                                                                  |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 87                                                                                |                                                                                   |                                                                                   | 499                                                                               |                                                                                   |                                                                                    | 713                                                                                 |                                                                                     |                                                                                     | 293                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 2.0                                                                               |                                                                                   |                                                                                   | 13.6                                                                              |                                                                                   |                                                                                    | 16.2                                                                                |                                                                                     |                                                                                     | 6.7                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.89                                                                               | 0.89                                                                                | 0.89                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Adj. Flow (vph)         | 18                                                                                | 4                                                                                 | 39                                                                                | 76                                                                                | 5                                                                                 | 176                                                                               | 33                                                                                 | 715                                                                                 | 57                                                                                  | 86                                                                                  | 720                                                                                 | 22                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 22                                                                                | 39                                                                                | 0                                                                                 | 81                                                                                | 176                                                                               | 0                                                                                  | 805                                                                                 | 0                                                                                   | 0                                                                                   | 828                                                                                 | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                | Perm                                                                              | Perm                                                                              | NA                                                                                | Perm                                                                              | Perm                                                                               | NA                                                                                  |                                                                                     | pm+pt                                                                               | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                    | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases        | 4                                                                                 |                                                                                   | 4                                                                                 | 8                                                                                 |                                                                                   | 8                                                                                 | 2                                                                                  |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 4                                                                                 | 4                                                                                 | 4                                                                                 | 8                                                                                 | 8                                                                                 | 8                                                                                 | 2                                                                                  | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               | 9.0                                                                               | 9.0                                                                               | 9.0                                                                               | 9.0                                                                               | 15.0                                                                               | 15.0                                                                                |                                                                                     | 3.0                                                                                 | 15.0                                                                                |                                                                                     |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              | 13.0                                                                              | 13.0                                                                              | 13.0                                                                              | 13.0                                                                              | 20.3                                                                               | 20.3                                                                                |                                                                                     | 9.5                                                                                 | 20.3                                                                                |                                                                                     |
| Total Split (s)         | 25.0                                                                              | 25.0                                                                              | 25.0                                                                              | 25.0                                                                              | 25.0                                                                              | 25.0                                                                              | 36.0                                                                               | 36.0                                                                                |                                                                                     | 14.0                                                                                | 50.0                                                                                |                                                                                     |
| Total Split (%)         | 33.3%                                                                             | 33.3%                                                                             | 33.3%                                                                             | 33.3%                                                                             | 33.3%                                                                             | 33.3%                                                                             | 48.0%                                                                              | 48.0%                                                                               |                                                                                     | 18.7%                                                                               | 66.7%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 4.3                                                                                | 4.3                                                                                 |                                                                                     | 4.3                                                                                 | 4.3                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 1.0                                                                                | 1.0                                                                                 |                                                                                     | 2.2                                                                                 | 1.0                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               |                                                                                    | 5.3                                                                                 |                                                                                     |                                                                                     | 5.3                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Lead                                                                               | Lead                                                                                |                                                                                     | Lag                                                                                 |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Yes                                                                                | Yes                                                                                 |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                              | C-Max                                                                               |                                                                                     | None                                                                                | C-Max                                                                               |                                                                                     |
| Act Effct Green (s)     |                                                                                   | 13.3                                                                              | 13.3                                                                              |                                                                                   | 13.3                                                                              | 13.3                                                                              |                                                                                    | 52.4                                                                                |                                                                                     |                                                                                     | 52.4                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.18                                                                              | 0.18                                                                              |                                                                                   | 0.18                                                                              | 0.18                                                                              |                                                                                    | 0.70                                                                                |                                                                                     |                                                                                     | 0.70                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.08                                                                              | 0.10                                                                              |                                                                                   | 0.34                                                                              | 0.65                                                                              |                                                                                    | 0.38                                                                                |                                                                                     |                                                                                     | 0.44                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 24.3                                                                              | 0.5                                                                               |                                                                                   | 29.5                                                                              | 39.5                                                                              |                                                                                    | 5.7                                                                                 |                                                                                     |                                                                                     | 4.0                                                                                 |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.1                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 24.3                                                                              | 0.5                                                                               |                                                                                   | 29.5                                                                              | 39.5                                                                              |                                                                                    | 5.7                                                                                 |                                                                                     |                                                                                     | 4.1                                                                                 |                                                                                     |
| LOS                     |                                                                                   | C                                                                                 | A                                                                                 |                                                                                   | C                                                                                 | D                                                                                 |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 9.1                                                                               |                                                                                   |                                                                                   | 36.3                                                                              |                                                                                   |                                                                                    | 5.7                                                                                 |                                                                                     |                                                                                     | 4.1                                                                                 |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 9                                                                                 | 0                                                                                 |                                                                                   | 34                                                                                | 77                                                                                |                                                                                    | 63                                                                                  |                                                                                     |                                                                                     | 14                                                                                  |                                                                                     |



# 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road Existing Conditions Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 22                                                                                | 0                                                                                 |                                                                                   | 58                                                                                | 111                                                                               |                                                                                    | 117                                                                                 |                                                                                     |                                                                                     | 189                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 7                                                                                 |                                                                                   |                                                                                   | 419                                                                               |                                                                                   |                                                                                    | 633                                                                                 |                                                                                     |                                                                                     | 213                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 75                                                                                |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 420                                                                               | 535                                                                               |                                                                                   | 379                                                                               | 428                                                                               |                                                                                    | 2129                                                                                |                                                                                     |                                                                                     | 1865                                                                                |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 230                                                                                 |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.05                                                                              | 0.07                                                                              |                                                                                   | 0.21                                                                              | 0.41                                                                              |                                                                                    | 0.38                                                                                |                                                                                     |                                                                                     | 0.51                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 48 (64%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 9.1

Intersection LOS: A

Intersection Capacity Utilization 64.6%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road

|                                                                                            |                                                                                          |                                                                                         |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|  Ø2 (R)  |  Ø1    |  Ø4 |
| 36 s                                                                                       | 14 s                                                                                     | 25 s                                                                                    |
|  Ø6 (R) |  Ø8 |                                                                                         |
| 50 s                                                                                       |                                                                                          | 25 s                                                                                    |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Existing Conditions Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (vph)    | 75                                                                                | 532                                                                               | 182                                                                               | 119                                                                               | 552                                                                               | 103                                                                               | 195                                                                                | 193                                                                                 | 126                                                                                 | 168                                                                                 | 185                                                                                 | 52                                                                                  |
| Future Volume (vph)     | 75                                                                                | 532                                                                               | 182                                                                               | 119                                                                               | 552                                                                               | 103                                                                               | 195                                                                                | 193                                                                                 | 126                                                                                 | 168                                                                                 | 185                                                                                 | 52                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 11                                                                                | 11                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                 | 11                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 200                                                                               |                                                                                   | 0                                                                                 | 175                                                                               |                                                                                   | 0                                                                                 | 210                                                                                |                                                                                     | 0                                                                                   | 170                                                                                 |                                                                                     | 0                                                                                   |
| Storage Lanes           | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                  |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 85                                                                                |                                                                                   |                                                                                   | 75                                                                                |                                                                                   |                                                                                   | 100                                                                                |                                                                                     |                                                                                     | 100                                                                                 |                                                                                     |                                                                                     |
| Lane Util. Factor       | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.962                                                                             |                                                                                   |                                                                                   | 0.976                                                                             |                                                                                   |                                                                                    | 0.941                                                                               |                                                                                     |                                                                                     | 0.967                                                                               |                                                                                     |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                              |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1711                                                                              | 3291                                                                              | 0                                                                                 | 1711                                                                              | 3454                                                                              | 0                                                                                 | 1711                                                                               | 1694                                                                                | 0                                                                                   | 1770                                                                                | 1801                                                                                | 0                                                                                   |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.418                                                                              |                                                                                     |                                                                                     | 0.358                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 1711                                                                              | 3291                                                                              | 0                                                                                 | 1711                                                                              | 3454                                                                              | 0                                                                                 | 753                                                                                | 1694                                                                                | 0                                                                                   | 667                                                                                 | 1801                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | No                                                                                  |
| Satd. Flow (RTOR)       |                                                                                   | 29                                                                                |                                                                                   |                                                                                   | 13                                                                                |                                                                                   |                                                                                    | 19                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 436                                                                               |                                                                                   |                                                                                   | 368                                                                               |                                                                                   |                                                                                    | 438                                                                                 |                                                                                     |                                                                                     | 355                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.9                                                                               |                                                                                   |                                                                                   | 8.4                                                                               |                                                                                   |                                                                                    | 10.0                                                                                |                                                                                     |                                                                                     | 9.7                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.96                                                                               | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Adj. Flow (vph)         | 82                                                                                | 585                                                                               | 200                                                                               | 128                                                                               | 594                                                                               | 111                                                                               | 203                                                                                | 201                                                                                 | 131                                                                                 | 175                                                                                 | 193                                                                                 | 54                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 82                                                                                | 785                                                                               | 0                                                                                 | 128                                                                               | 705                                                                               | 0                                                                                 | 203                                                                                | 332                                                                                 | 0                                                                                   | 175                                                                                 | 247                                                                                 | 0                                                                                   |
| Turn Type               | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | NA                                                                                |                                                                                   | pm+pt                                                                              | NA                                                                                  |                                                                                     | pm+pt                                                                               | NA                                                                                  |                                                                                     |
| Protected Phases        | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 7                                                                                  | 4                                                                                   |                                                                                     | 3                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 4                                                                                  |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 7                                                                                  | 4                                                                                   |                                                                                     | 3                                                                                   | 8                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 15.0                                                                              |                                                                                   | 5.0                                                                               | 15.0                                                                              |                                                                                   | 5.0                                                                                | 10.0                                                                                |                                                                                     | 5.0                                                                                 | 10.0                                                                                |                                                                                     |
| Minimum Split (s)       | 9.7                                                                               | 21.6                                                                              |                                                                                   | 9.7                                                                               | 21.6                                                                              |                                                                                   | 9.3                                                                                | 16.8                                                                                |                                                                                     | 9.3                                                                                 | 16.8                                                                                |                                                                                     |
| Total Split (s)         | 17.7                                                                              | 41.6                                                                              |                                                                                   | 17.7                                                                              | 41.6                                                                              |                                                                                   | 22.3                                                                               | 36.8                                                                                |                                                                                     | 22.3                                                                                | 36.8                                                                                |                                                                                     |
| Total Split (%)         | 11.7%                                                                             | 27.5%                                                                             |                                                                                   | 11.7%                                                                             | 27.5%                                                                             |                                                                                   | 14.7%                                                                              | 24.3%                                                                               |                                                                                     | 14.7%                                                                               | 24.3%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.0                                                                               | 4.1                                                                               |                                                                                   | 3.0                                                                               | 4.1                                                                               |                                                                                   | 3.3                                                                                | 4.4                                                                                 |                                                                                     | 3.3                                                                                 | 4.4                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.7                                                                               | 2.5                                                                               |                                                                                   | 1.7                                                                               | 2.5                                                                               |                                                                                   | 1.0                                                                                | 2.4                                                                                 |                                                                                     | 1.0                                                                                 | 2.4                                                                                 |                                                                                     |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     | 4.7                                                                               | 6.6                                                                               |                                                                                   | 4.7                                                                               | 6.6                                                                               |                                                                                   | 4.3                                                                                | 6.8                                                                                 |                                                                                     | 4.3                                                                                 | 6.8                                                                                 |                                                                                     |
| Lead/Lag                | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                               | Lag                                                                                 |                                                                                     | Lead                                                                                | Lag                                                                                 |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                | Yes                                                                                 |                                                                                     | Yes                                                                                 | Yes                                                                                 |                                                                                     |
| Recall Mode             | None                                                                              | Min                                                                               |                                                                                   | None                                                                              | Min                                                                               |                                                                                   | None                                                                               | None                                                                                |                                                                                     | None                                                                                | None                                                                                |                                                                                     |
| Act Effct Green (s)     | 9.4                                                                               | 32.4                                                                              |                                                                                   | 12.3                                                                              | 37.8                                                                              |                                                                                   | 42.9                                                                               | 27.0                                                                                |                                                                                     | 38.5                                                                                | 24.8                                                                                |                                                                                     |
| Actuated g/C Ratio      | 0.09                                                                              | 0.31                                                                              |                                                                                   | 0.12                                                                              | 0.36                                                                              |                                                                                   | 0.41                                                                               | 0.26                                                                                |                                                                                     | 0.36                                                                                | 0.24                                                                                |                                                                                     |
| v/c Ratio               | 0.54                                                                              | 0.76                                                                              |                                                                                   | 0.64                                                                              | 0.57                                                                              |                                                                                   | 0.48                                                                               | 0.74                                                                                |                                                                                     | 0.49                                                                                | 0.58                                                                                |                                                                                     |
| Control Delay           | 61.1                                                                              | 38.2                                                                              |                                                                                   | 62.4                                                                              | 31.2                                                                              |                                                                                   | 23.9                                                                               | 46.1                                                                                |                                                                                     | 24.5                                                                                | 43.1                                                                                |                                                                                     |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Delay             | 61.1                                                                              | 38.2                                                                              |                                                                                   | 62.4                                                                              | 31.2                                                                              |                                                                                   | 23.9                                                                               | 46.1                                                                                |                                                                                     | 24.5                                                                                | 43.1                                                                                |                                                                                     |
| LOS                     | E                                                                                 | D                                                                                 |                                                                                   | E                                                                                 | C                                                                                 |                                                                                   | C                                                                                  | D                                                                                   |                                                                                     | C                                                                                   | D                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 40.4                                                                              |                                                                                   |                                                                                   | 36.0                                                                              |                                                                                   |                                                                                    | 37.7                                                                                |                                                                                     |                                                                                     | 35.4                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Queue Length 50th (ft)  | 55                                                                                | 251                                                                               |                                                                                   | 86                                                                                | 210                                                                               |                                                                                   | 88                                                                                 | 198                                                                                 |                                                                                     | 75                                                                                  | 150                                                                                 |                                                                                     |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Existing Conditions Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |      |
|-------------------------|------|
| Lane Group              | Ø9   |
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 33.0 |
| Total Split (s)         | 33.0 |
| Total Split (%)         | 22%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |



# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Existing Conditions Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  | 110                                                                               | 346                                                                               |                                                                                   | #175                                                                              | 305                                                                               |                                                                                   | 146                                                                                | 323                                                                                 |                                                                                     | 125                                                                                 | 250                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 356                                                                               |                                                                                   |                                                                                   | 288                                                                               |                                                                                   |                                                                                    | 358                                                                                 |                                                                                     |                                                                                     | 275                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 200                                                                               |                                                                                   |                                                                                   | 175                                                                               |                                                                                   |                                                                                   | 210                                                                                |                                                                                     |                                                                                     | 170                                                                                 |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 212                                                                               | 1121                                                                              |                                                                                   | 212                                                                               | 1245                                                                              |                                                                                   | 484                                                                                | 499                                                                                 |                                                                                     | 468                                                                                 | 517                                                                                 |                                                                                     |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       | 0.39                                                                              | 0.70                                                                              |                                                                                   | 0.60                                                                              | 0.57                                                                              |                                                                                   | 0.42                                                                               | 0.67                                                                                |                                                                                     | 0.37                                                                                | 0.48                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 151.4

Actuated Cycle Length: 105.5

Natural Cycle: 125

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 37.7

Intersection LOS: D

Intersection Capacity Utilization 72.9%

ICU Level of Service C

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)

|                                                                                        |                                                                                        |                                                                                        |                                                                                         |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø9 |  Ø3 |  Ø4 |
| 17.7 s                                                                                 | 41.6 s                                                                                 | 33 s                                                                                   | 22.3 s                                                                                  | 36.8 s                                                                                   |
|  Ø5 |  Ø6 |                                                                                        |  Ø7 |  Ø8 |
| 17.7 s                                                                                 | 41.6 s                                                                                 |                                                                                        | 22.3 s                                                                                  | 36.8 s                                                                                   |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø9 |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & R2017 SR (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |  |
| Traffic Volume (vph)    | 68                                                                                | 639                                                                               | 30                                                                                | 57                                                                                | 579                                                                               | 65                                                                                | 154                                                                                | 11                                                                                  | 77                                                                                  | 51                                                                                  | 12                                                                                  | 31                                                                                  |
| Future Volume (vph)     | 68                                                                                | 639                                                                               | 30                                                                                | 57                                                                                | 579                                                                               | 65                                                                                | 154                                                                                | 11                                                                                  | 77                                                                                  | 51                                                                                  | 12                                                                                  | 31                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                 | 13                                                                                  | 13                                                                                  | 12                                                                                  | 13                                                                                  | 13                                                                                  |
| Storage Length (ft)     | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 25                                                                                  | 0                                                                                   |                                                                                     | 25                                                                                  |
| Storage Lanes           | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 1                                                                                   | 0                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)       | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.994                                                                             |                                                                                   |                                                                                   | 0.986                                                                             |                                                                                   |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected           |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                    | 0.956                                                                               |                                                                                     |                                                                                     | 0.961                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3351                                                                              | 0                                                                                 | 0                                                                                 | 3327                                                                              | 0                                                                                 | 0                                                                                  | 1822                                                                                | 1620                                                                                | 0                                                                                   | 1832                                                                                | 1620                                                                                |
| Flt Permitted           |                                                                                   | 0.821                                                                             |                                                                                   |                                                                                   | 0.822                                                                             |                                                                                   |                                                                                    | 0.689                                                                               |                                                                                     |                                                                                     | 0.705                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 2765                                                                              | 0                                                                                 | 0                                                                                 | 2746                                                                              | 0                                                                                 | 0                                                                                  | 1313                                                                                | 1620                                                                                | 0                                                                                   | 1344                                                                                | 1620                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 7                                                                                 |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                    |                                                                                     | 157                                                                                 |                                                                                     |                                                                                     | 157                                                                                 |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 442                                                                               |                                                                                   |                                                                                   | 502                                                                               |                                                                                   |                                                                                    | 142                                                                                 |                                                                                     |                                                                                     | 135                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                    | 3.9                                                                                 |                                                                                     |                                                                                     | 3.7                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.95                                                                               | 0.95                                                                                | 0.95                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                |
| Heavy Vehicles (%)      | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                 | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  |
| Adj. Flow (vph)         | 75                                                                                | 702                                                                               | 33                                                                                | 59                                                                                | 597                                                                               | 67                                                                                | 162                                                                                | 12                                                                                  | 81                                                                                  | 58                                                                                  | 14                                                                                  | 35                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 810                                                                               | 0                                                                                 | 0                                                                                 | 723                                                                               | 0                                                                                 | 0                                                                                  | 174                                                                                 | 81                                                                                  | 0                                                                                   | 72                                                                                  | 35                                                                                  |
| Turn Type               | pm+pt                                                                             | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  | Perm                                                                                | Perm                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases        | 1                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                  |                                                                                     | 4                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   |
| Detector Phase          | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                  | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0                                                                                | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |
| Minimum Split (s)       | 9.0                                                                               | 20.8                                                                              |                                                                                   | 20.8                                                                              | 20.8                                                                              |                                                                                   | 11.0                                                                               | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                |
| Total Split (s)         | 9.0                                                                               | 39.0                                                                              |                                                                                   | 30.0                                                                              | 30.0                                                                              |                                                                                   | 14.0                                                                               | 14.0                                                                                | 14.0                                                                                | 14.0                                                                                | 14.0                                                                                | 14.0                                                                                |
| Total Split (%)         | 12.0%                                                                             | 52.0%                                                                             |                                                                                   | 40.0%                                                                             | 40.0%                                                                             |                                                                                   | 18.7%                                                                              | 18.7%                                                                               | 18.7%                                                                               | 18.7%                                                                               | 18.7%                                                                               | 18.7%                                                                               |
| Yellow Time (s)         | 3.0                                                                               | 4.3                                                                               |                                                                                   | 4.3                                                                               | 4.3                                                                               |                                                                                   | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| All-Red Time (s)        | 1.0                                                                               | 1.5                                                                               |                                                                                   | 1.5                                                                               | 1.5                                                                               |                                                                                   | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     |                                                                                   | 5.8                                                                               |                                                                                   |                                                                                   | 5.8                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 | 4.0                                                                                 |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |
| Lead/Lag                | Lead                                                                              |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               |                                                                                   | Lag                                                                                | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode             | Min                                                                               | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Act Effect Green (s)    |                                                                                   | 48.2                                                                              |                                                                                   |                                                                                   | 38.7                                                                              |                                                                                   |                                                                                    | 17.0                                                                                | 17.0                                                                                |                                                                                     | 17.0                                                                                | 17.0                                                                                |
| Actuated g/C Ratio      |                                                                                   | 0.64                                                                              |                                                                                   |                                                                                   | 0.52                                                                              |                                                                                   |                                                                                    | 0.23                                                                                | 0.23                                                                                |                                                                                     | 0.23                                                                                | 0.23                                                                                |
| v/c Ratio               |                                                                                   | 0.45                                                                              |                                                                                   |                                                                                   | 0.51                                                                              |                                                                                   |                                                                                    | 0.59                                                                                | 0.17                                                                                |                                                                                     | 0.24                                                                                | 0.07                                                                                |
| Control Delay           |                                                                                   | 7.7                                                                               |                                                                                   |                                                                                   | 7.9                                                                               |                                                                                   |                                                                                    | 34.1                                                                                | 0.9                                                                                 |                                                                                     | 25.1                                                                                | 0.3                                                                                 |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             |                                                                                   | 7.7                                                                               |                                                                                   |                                                                                   | 7.9                                                                               |                                                                                   |                                                                                    | 34.1                                                                                | 0.9                                                                                 |                                                                                     | 25.1                                                                                | 0.3                                                                                 |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   | A                                                                                   |                                                                                     | C                                                                                   | A                                                                                   |
| Approach Delay          |                                                                                   | 7.7                                                                               |                                                                                   |                                                                                   | 7.9                                                                               |                                                                                   |                                                                                    | 23.6                                                                                |                                                                                     |                                                                                     | 17.0                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |



# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & R2017 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

| Lane Group              | Ø3   |
|-------------------------|------|
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Heavy Vehicles (%)      |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 3    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 22.0 |
| Total Split (s)         | 22.0 |
| Total Split (%)         | 29%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                | Lead |
| Lead-Lag Optimize?      | Yes  |
| Recall Mode             | None |
| Act Effect Green (s)    |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  |                                                                                   | 81                                                                                |                                                                                   |                                                                                   | 54                                                                                |                                                                                   |                                                                                    | 72                                                                                  | 0                                                                                   |                                                                                     | 27                                                                                  | 0                                                                                   |
| Queue Length 95th (ft)  |                                                                                   | 125                                                                               |                                                                                   |                                                                                   | 70                                                                                |                                                                                   |                                                                                    | 128                                                                                 | 3                                                                                   |                                                                                     | 57                                                                                  | 0                                                                                   |
| Internal Link Dist (ft) |                                                                                   | 362                                                                               |                                                                                   |                                                                                   | 422                                                                               |                                                                                   |                                                                                    | 62                                                                                  |                                                                                     |                                                                                     | 55                                                                                  |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |
| Base Capacity (vph)     |                                                                                   | 1807                                                                              |                                                                                   |                                                                                   | 1423                                                                              |                                                                                   |                                                                                    | 297                                                                                 | 489                                                                                 |                                                                                     | 304                                                                                 | 489                                                                                 |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       |                                                                                   | 0.45                                                                              |                                                                                   |                                                                                   | 0.51                                                                              |                                                                                   |                                                                                    | 0.59                                                                                | 0.17                                                                                |                                                                                     | 0.24                                                                                | 0.07                                                                                |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 19 (25%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 10.4

Intersection LOS: B

Intersection Capacity Utilization 69.1%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                            |                                                                                        |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø3 |  Ø4 |
| 9 s                                                                                        | 30 s                                                                                       | 22 s                                                                                   | 14 s                                                                                     |
|  Ø6 (R) |                                                                                            |                                                                                        |                                                                                          |
| 39 s                                                                                       |                                                                                            |                                                                                        |                                                                                          |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø3 |
| Queue Length 50th (ft)  |    |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |



# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) 2017 Existing Conditions Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                   |  |  |  |  |                                                                                     |
| Traffic Volume (vph)    | 3                                                                                 | 684                                                                               | 101                                                                               | 44                                                                                | 646                                                                               | 1                                                                                 | 88                                                                                | 2                                                                                   | 48                                                                                  | 3                                                                                   | 9                                                                                   | 8                                                                                   |
| Future Volume (vph)     | 3                                                                                 | 684                                                                               | 101                                                                               | 44                                                                                | 646                                                                               | 1                                                                                 | 88                                                                                | 2                                                                                   | 48                                                                                  | 3                                                                                   | 9                                                                                   | 8                                                                                   |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 10                                                                                  | 10                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                     | 250                                                                                 | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes           | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.981                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | 0.850                                                                               |                                                                                     | 0.929                                                                               |                                                                                     |
| Flt Protected           |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                   | 0.953                                                                               |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3324                                                                              | 0                                                                                 | 0                                                                                 | 3378                                                                              | 0                                                                                 | 0                                                                                 | 1641                                                                                | 1463                                                                                | 1752                                                                                | 1714                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.955                                                                             |                                                                                   |                                                                                   | 0.843                                                                             |                                                                                   |                                                                                   | 0.715                                                                               |                                                                                     | 0.688                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 3174                                                                              | 0                                                                                 | 0                                                                                 | 2856                                                                              | 0                                                                                 | 0                                                                                 | 1231                                                                                | 1463                                                                                | 1269                                                                                | 1714                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 44                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | 111                                                                                 |                                                                                     | 10                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 502                                                                               |                                                                                   |                                                                                   | 407                                                                               |                                                                                   |                                                                                   | 423                                                                                 |                                                                                     |                                                                                     | 198                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                   | 11.5                                                                                |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.84                                                                              | 0.84                                                                                | 0.84                                                                                | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                |
| Heavy Vehicles (%)      | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  |
| Adj. Flow (vph)         | 3                                                                                 | 786                                                                               | 116                                                                               | 46                                                                                | 680                                                                               | 1                                                                                 | 105                                                                               | 2                                                                                   | 57                                                                                  | 4                                                                                   | 11                                                                                  | 10                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 905                                                                               | 0                                                                                 | 0                                                                                 | 727                                                                               | 0                                                                                 | 0                                                                                 | 107                                                                                 | 57                                                                                  | 4                                                                                   | 21                                                                                  | 0                                                                                   |
| Turn Type               | pm+pt                                                                             | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                  | Perm                                                                                | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        | 1                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                     | 4                                                                                   | 4                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 3.0                                                                               | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0                                                                               | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 7.3                                                                               | 21.3                                                                              |                                                                                   | 21.3                                                                              | 21.3                                                                              |                                                                                   | 11.9                                                                              | 11.9                                                                                | 11.9                                                                                | 11.9                                                                                | 11.9                                                                                |                                                                                     |
| Total Split (s)         | 7.3                                                                               | 55.0                                                                              |                                                                                   | 47.7                                                                              | 47.7                                                                              |                                                                                   | 20.0                                                                              | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                |                                                                                     |
| Total Split (%)         | 9.7%                                                                              | 73.3%                                                                             |                                                                                   | 63.6%                                                                             | 63.6%                                                                             |                                                                                   | 26.7%                                                                             | 26.7%                                                                               | 26.7%                                                                               | 26.7%                                                                               | 26.7%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.3                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.0                                                                               | 1.3                                                                               |                                                                                   | 1.3                                                                               | 1.3                                                                               |                                                                                   | 1.9                                                                               | 1.9                                                                                 | 1.9                                                                                 | 1.9                                                                                 | 1.9                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 6.3                                                                               |                                                                                   |                                                                                   | 6.3                                                                               |                                                                                   |                                                                                   | 4.9                                                                                 | 4.9                                                                                 | 4.9                                                                                 | 4.9                                                                                 |                                                                                     |
| Lead/Lag                | Lead                                                                              |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | Max                                                                               | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                              | None                                                                                | None                                                                                | None                                                                                | None                                                                                |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 55.7                                                                              |                                                                                   |                                                                                   | 41.4                                                                              |                                                                                   |                                                                                   | 10.5                                                                                | 10.5                                                                                | 10.5                                                                                | 10.5                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.74                                                                              |                                                                                   |                                                                                   | 0.55                                                                              |                                                                                   |                                                                                   | 0.14                                                                                | 0.14                                                                                | 0.14                                                                                | 0.14                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.38                                                                              |                                                                                   |                                                                                   | 0.46                                                                              |                                                                                   |                                                                                   | 0.63                                                                                | 0.19                                                                                | 0.02                                                                                | 0.08                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 3.0                                                                               |                                                                                   |                                                                                   | 6.6                                                                               |                                                                                   |                                                                                   | 45.7                                                                                | 2.5                                                                                 | 25.7                                                                                | 19.4                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 3.0                                                                               |                                                                                   |                                                                                   | 6.6                                                                               |                                                                                   |                                                                                   | 45.7                                                                                | 2.5                                                                                 | 25.7                                                                                | 19.4                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | D                                                                                   | A                                                                                   | C                                                                                   | B                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 3.0                                                                               |                                                                                   |                                                                                   | 6.6                                                                               |                                                                                   |                                                                                   | 30.7                                                                                |                                                                                     |                                                                                     | 20.4                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |

# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) 2017 Existing Conditions Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  |                                                                                   | 44                                                                                |                                                                                   |                                                                                   | 40                                                                                |                                                                                   |                                                                                    | 48                                                                                  | 0                                                                                   | 2                                                                                   | 5                                                                                   |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 58                                                                                |                                                                                   |                                                                                   | 51                                                                                |                                                                                   |                                                                                    | 84                                                                                  | 3                                                                                   | 8                                                                                   | 18                                                                                  |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 422                                                                               |                                                                                   |                                                                                   | 327                                                                               |                                                                                   |                                                                                    | 343                                                                                 |                                                                                     |                                                                                     | 118                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 250                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 2384                                                                              |                                                                                   |                                                                                   | 1576                                                                              |                                                                                   |                                                                                    | 247                                                                                 | 383                                                                                 | 255                                                                                 | 353                                                                                 |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.38                                                                              |                                                                                   |                                                                                   | 0.46                                                                              |                                                                                   |                                                                                    | 0.43                                                                                | 0.15                                                                                | 0.02                                                                                | 0.06                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 21 (28%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 7.2

Intersection LOS: A

Intersection Capacity Utilization 67.6%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                            |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø4 |
| 7.3 s                                                                                      | 47.7 s                                                                                     | 20 s                                                                                     |
|  Ø6 (R) |                                                                                            |                                                                                          |
| 55 s                                                                                       |                                                                                            |                                                                                          |

## 108: Burroughs Road &amp; Route 58 (Black Rock Turnpike)

2017 Existing Conditions

## Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 59                                                                                | 711                                                                               | 11                                                                                | 5                                                                                 | 632                                                                               | 107                                                                               | 13                                                                                 | 56                                                                                  | 7                                                                                   | 111                                                                                 | 48                                                                                  | 44                                                                                  |
| Future Volume (vph)     | 59                                                                                | 711                                                                               | 11                                                                                | 5                                                                                 | 632                                                                               | 107                                                                               | 13                                                                                 | 56                                                                                  | 7                                                                                   | 111                                                                                 | 48                                                                                  | 44                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                 | 16                                                                                  | 12                                                                                  | 12                                                                                  | 16                                                                                  | 12                                                                                  |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   | 0.978                                                                             |                                                                                   |                                                                                    | 0.987                                                                               |                                                                                     |                                                                                     | 0.971                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 0.992                                                                               |                                                                                     |                                                                                     | 0.973                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3335                                                                              | 0                                                                                 | 0                                                                                 | 3282                                                                              | 0                                                                                 | 0                                                                                  | 2027                                                                                | 0                                                                                   | 0                                                                                   | 1956                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.830                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                    | 0.932                                                                               |                                                                                     |                                                                                     | 0.815                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 2779                                                                              | 0                                                                                 | 0                                                                                 | 3118                                                                              | 0                                                                                 | 0                                                                                  | 1905                                                                                | 0                                                                                   | 0                                                                                   | 1639                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 3                                                                                 |                                                                                   |                                                                                   | 37                                                                                |                                                                                   |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     | 20                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 407                                                                               |                                                                                   |                                                                                   | 996                                                                               |                                                                                   |                                                                                    | 466                                                                                 |                                                                                     |                                                                                     | 300                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                   | 22.6                                                                              |                                                                                   |                                                                                    | 12.7                                                                                |                                                                                     |                                                                                     | 8.2                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.80                                                                               | 0.80                                                                                | 0.80                                                                                | 0.83                                                                                | 0.83                                                                                | 0.83                                                                                |
| Heavy Vehicles (%)      | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                 | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  |
| Adj. Flow (vph)         | 69                                                                                | 827                                                                               | 13                                                                                | 5                                                                                 | 658                                                                               | 111                                                                               | 16                                                                                 | 70                                                                                  | 9                                                                                   | 134                                                                                 | 58                                                                                  | 53                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 909                                                                               | 0                                                                                 | 0                                                                                 | 774                                                                               | 0                                                                                 | 0                                                                                  | 95                                                                                  | 0                                                                                   | 0                                                                                   | 245                                                                                 | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                  |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 6                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                  | 4                                                                                   |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 15.0                                                                              | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 9.0                                                                                | 9.0                                                                                 |                                                                                     | 9.0                                                                                 | 9.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 20.6                                                                              | 20.6                                                                              |                                                                                   | 20.6                                                                              | 20.6                                                                              |                                                                                   | 14.4                                                                               | 14.4                                                                                |                                                                                     | 14.4                                                                                | 14.4                                                                                |                                                                                     |
| Total Split (s)         | 44.0                                                                              | 44.0                                                                              |                                                                                   | 44.0                                                                              | 44.0                                                                              |                                                                                   | 31.0                                                                               | 31.0                                                                                |                                                                                     | 31.0                                                                                | 31.0                                                                                |                                                                                     |
| Total Split (%)         | 58.7%                                                                             | 58.7%                                                                             |                                                                                   | 58.7%                                                                             | 58.7%                                                                             |                                                                                   | 41.3%                                                                              | 41.3%                                                                               |                                                                                     | 41.3%                                                                               | 41.3%                                                                               |                                                                                     |
| Yellow Time (s)         | 4.1                                                                               | 4.1                                                                               |                                                                                   | 4.1                                                                               | 4.1                                                                               |                                                                                   | 3.1                                                                                | 3.1                                                                                 |                                                                                     | 3.1                                                                                 | 3.1                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.5                                                                               | 1.5                                                                               |                                                                                   | 1.5                                                                               | 1.5                                                                               |                                                                                   | 2.3                                                                                | 2.3                                                                                 |                                                                                     | 2.3                                                                                 | 2.3                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                    | 5.4                                                                                 |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | C-Max                                                                             | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                               | None                                                                                |                                                                                     | None                                                                                | None                                                                                |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 48.5                                                                              |                                                                                   |                                                                                   | 48.5                                                                              |                                                                                   |                                                                                    | 15.5                                                                                |                                                                                     |                                                                                     | 15.5                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.65                                                                              |                                                                                   |                                                                                   | 0.65                                                                              |                                                                                   |                                                                                    | 0.21                                                                                |                                                                                     |                                                                                     | 0.21                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.51                                                                              |                                                                                   |                                                                                   | 0.38                                                                              |                                                                                   |                                                                                    | 0.24                                                                                |                                                                                     |                                                                                     | 0.69                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 4.9                                                                               |                                                                                   |                                                                                   | 7.3                                                                               |                                                                                   |                                                                                    | 22.2                                                                                |                                                                                     |                                                                                     | 34.8                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 5.0                                                                               |                                                                                   |                                                                                   | 7.3                                                                               |                                                                                   |                                                                                    | 22.2                                                                                |                                                                                     |                                                                                     | 34.8                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 5.0                                                                               |                                                                                   |                                                                                   | 7.3                                                                               |                                                                                   |                                                                                    | 22.2                                                                                |                                                                                     |                                                                                     | 34.8                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 40                                                                                |                                                                                   |                                                                                   | 72                                                                                |                                                                                   |                                                                                    | 34                                                                                  |                                                                                     |                                                                                     | 97                                                                                  |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 53                                                                                |                                                                                   |                                                                                   | 135                                                                               |                                                                                   |                                                                                    | 56                                                                                  |                                                                                     |                                                                                     | 136                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 327                                                                               |                                                                                   |                                                                                   | 916                                                                               |                                                                                   |                                                                                    | 386                                                                                 |                                                                                     |                                                                                     | 220                                                                                 |                                                                                     |

108: Burroughs Road & Route 58 (Black Rock Turnpike)  
Lanes, Volumes, Timings

2017 Existing Conditions  
Timing Plan: Weekday Midday P

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Turn Bay Length (ft)   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)    |                                                                                   | 1797                                                                              |                                                                                   |                                                                                   | 2028                                                                              |                                                                                   |                                                                                    | 655                                                                                 |                                                                                     |                                                                                     | 572                                                                                 |                                                                                     |
| Starvation Cap Reductn |                                                                                   | 75                                                                                |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   | 0.53                                                                              |                                                                                   |                                                                                   | 0.38                                                                              |                                                                                   |                                                                                    | 0.15                                                                                |                                                                                     |                                                                                     | 0.43                                                                                |                                                                                     |

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 20 (27%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 40

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 10.3

Intersection LOS: B

Intersection Capacity Utilization 74.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)

|                                                                                           |                                                                                    |
|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|  Ø2 (R)  |   |
| 44 s                                                                                      | 31 s                                                                               |
|  Ø6 (R) |  |
| 44 s                                                                                      | 31 s                                                                               |



109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) 201 Existing (Black Rock Turnpike)  
 Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         | →     | ↖     | ↗    | ↘     | ↙     | ↕     | ↖     | ↗     | ↘    | ↙    | ↕     | ↖     |
|-------------------------|-------|-------|------|-------|-------|-------|-------|-------|------|------|-------|-------|
| Lane Group              | EBT   | EBR   | EBR2 | WBL2  | WBL   | WBT   | NWL2  | NWL   | NWR  | NWR2 | NEL   | NET   |
| Lane Configurations     | ↖     | ↗     |      |       |       | ↕     |       | ↖     |      |      |       | ↕     |
| Traffic Volume (vph)    | 336   | 442   | 6    | 32    | 7     | 328   | 4     | 374   | 2    | 23   | 5     | 0     |
| Future Volume (vph)     | 336   | 442   | 6    | 32    | 7     | 328   | 4     | 374   | 2    | 23   | 5     | 0     |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  | 1900  | 1900  | 1900 | 1900 | 1900  | 1900  |
| Lane Width (ft)         | 12    | 12    | 12   | 12    | 11    | 11    | 12    | 10    | 12   | 12   | 12    | 12    |
| Lane Util. Factor       | 1.00  | 1.00  | 1.00 | 0.95  | 0.95  | 0.95  | 0.95  | 0.97  | 0.95 | 0.95 | 1.00  | 1.00  |
| Frt                     |       | 0.850 |      |       |       |       |       | 0.991 |      |      |       | 0.939 |
| Flt Protected           |       |       |      |       |       | 0.995 |       | 0.955 |      |      |       | 0.973 |
| Satd. Flow (prot)       | 1827  | 1553  | 0    | 0     | 0     | 3339  | 0     | 3131  | 0    | 0    | 0     | 1669  |
| Flt Permitted           |       |       |      |       |       | 0.862 |       | 0.946 |      |      |       |       |
| Satd. Flow (perm)       | 1827  | 1553  | 0    | 0     | 0     | 2892  | 0     | 3101  | 0    | 0    | 0     | 1715  |
| Right Turn on Red       |       |       | Yes  |       |       |       |       |       |      | Yes  |       |       |
| Satd. Flow (RTOR)       |       | 57    |      |       |       |       |       | 152   |      |      |       |       |
| Link Speed (mph)        | 30    |       |      |       |       | 30    |       | 30    |      |      |       | 25    |
| Link Distance (ft)      | 996   |       |      |       |       | 549   |       | 218   |      |      |       | 653   |
| Travel Time (s)         | 22.6  |       |      |       |       | 12.5  |       | 5.0   |      |      |       | 17.8  |
| Peak Hour Factor        | 0.90  | 0.90  | 0.90 | 0.90  | 0.90  | 0.90  | 0.95  | 0.95  | 0.95 | 0.95 | 0.80  | 0.80  |
| Heavy Vehicles (%)      | 4%    | 4%    | 4%   | 4%    | 4%    | 4%    | 4%    | 4%    | 4%   | 4%   | 4%    | 4%    |
| Adj. Flow (vph)         | 373   | 491   | 7    | 36    | 8     | 364   | 4     | 394   | 2    | 24   | 6     | 0     |
| Shared Lane Traffic (%) |       |       |      |       |       |       |       |       |      |      |       |       |
| Lane Group Flow (vph)   | 373   | 498   | 0    | 0     | 0     | 408   | 0     | 424   | 0    | 0    | 0     | 11    |
| Turn Type               | NA    | pm+ov |      | Perm  | Perm  | NA    | D.Pm  | Prot  |      |      | Perm  | NA    |
| Protected Phases        | 2     | 4     |      |       |       | 2     |       | 4     |      |      |       | 5     |
| Permitted Phases        |       | 2     |      | 2     | 2     |       | 4     |       |      |      | 5     |       |
| Detector Phase          | 2     | 4     |      | 2     | 2     | 2     | 4     | 4     |      |      | 5     | 5     |
| Switch Phase            |       |       |      |       |       |       |       |       |      |      |       |       |
| Minimum Initial (s)     | 15.0  | 9.0   |      | 15.0  | 15.0  | 15.0  | 9.0   | 9.0   |      |      | 5.0   | 5.0   |
| Minimum Split (s)       | 22.8  | 15.4  |      | 22.8  | 22.8  | 22.8  | 15.4  | 15.4  |      |      | 12.6  | 12.6  |
| Total Split (s)         | 35.8  | 33.4  |      | 35.8  | 35.8  | 35.8  | 33.4  | 33.4  |      |      | 19.6  | 19.6  |
| Total Split (%)         | 40.3% | 37.6% |      | 40.3% | 40.3% | 40.3% | 37.6% | 37.6% |      |      | 22.1% | 22.1% |
| Yellow Time (s)         | 4.1   | 3.3   |      | 4.1   | 4.1   | 4.1   | 3.3   | 3.3   |      |      | 3.3   | 3.3   |
| All-Red Time (s)        | 3.7   | 3.1   |      | 3.7   | 3.7   | 3.7   | 3.1   | 3.1   |      |      | 4.3   | 4.3   |
| Lost Time Adjust (s)    | 0.0   | 0.0   |      |       |       | 0.0   |       | 0.0   |      |      |       | 0.0   |
| Total Lost Time (s)     | 7.8   | 6.4   |      |       |       | 7.8   |       | 6.4   |      |      |       | 7.6   |
| Lead/Lag                |       |       |      |       |       |       |       |       |      |      |       |       |
| Lead-Lag Optimize?      |       |       |      |       |       |       |       |       |      |      |       |       |
| Recall Mode             | Min   | None  |      | Min   | Min   | Min   | None  | None  |      |      | None  | None  |
| Act Effect Green (s)    | 16.9  | 40.2  |      |       |       | 16.9  |       | 10.5  |      |      |       | 5.4   |
| Actuated g/C Ratio      | 0.36  | 0.87  |      |       |       | 0.36  |       | 0.23  |      |      |       | 0.12  |
| v/c Ratio               | 0.56  | 0.37  |      |       |       | 0.39  |       | 0.52  |      |      |       | 0.06  |
| Control Delay           | 17.7  | 3.5   |      |       |       | 13.9  |       | 13.8  |      |      |       | 24.3  |
| Queue Delay             | 0.0   | 0.0   |      |       |       | 0.0   |       | 0.0   |      |      |       | 0.0   |
| Total Delay             | 17.7  | 3.5   |      |       |       | 13.9  |       | 13.8  |      |      |       | 24.3  |
| LOS                     | B     | A     |      |       |       | B     |       | B     |      |      |       | C     |
| Approach Delay          | 9.6   |       |      |       |       | 13.9  |       | 13.8  |      |      |       | 24.3  |
| Approach LOS            | A     |       |      |       |       | B     |       | B     |      |      |       | C     |
| Queue Length 50th (ft)  | 56    | 0     |      |       |       | 30    |       | 24    |      |      |       | 2     |
| Queue Length 95th (ft)  | 199   | 109   |      |       |       | 99    |       | 86    |      |      |       | 16    |
| Internal Link Dist (ft) | 916   |       |      |       |       | 469   |       | 138   |      |      |       | 573   |

109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) 2017 Existing Black Rock Turnpike  
 Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | NER2                                                                              | SWL                                                                               | SWT                                                                               | SWR                                                                               |
| Lane Configurations     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Traffic Volume (vph)    | 4                                                                                 | 5                                                                                 | 0                                                                                 | 6                                                                                 |
| Future Volume (vph)     | 4                                                                                 | 5                                                                                 | 0                                                                                 | 6                                                                                 |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 12                                                                                | 15                                                                                | 12                                                                                | 12                                                                                |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     |                                                                                   |                                                                                   | 0.923                                                                             |                                                                                   |
| Flt Protected           |                                                                                   |                                                                                   | 0.979                                                                             |                                                                                   |
| Satd. Flow (prot)       | 0                                                                                 | 0                                                                                 | 1651                                                                              | 0                                                                                 |
| Flt Permitted           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 0                                                                                 | 0                                                                                 | 1686                                                                              | 0                                                                                 |
| Right Turn on Red       | No                                                                                |                                                                                   |                                                                                   | No                                                                                |
| Satd. Flow (RTOR)       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Link Speed (mph)        |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |
| Link Distance (ft)      |                                                                                   |                                                                                   | 695                                                                               |                                                                                   |
| Travel Time (s)         |                                                                                   |                                                                                   | 19.0                                                                              |                                                                                   |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              |
| Heavy Vehicles (%)      | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                |
| Adj. Flow (vph)         | 5                                                                                 | 6                                                                                 | 0                                                                                 | 8                                                                                 |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 0                                                                                 | 0                                                                                 | 14                                                                                | 0                                                                                 |
| Turn Type               |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   |
| Protected Phases        |                                                                                   |                                                                                   | 5                                                                                 |                                                                                   |
| Permitted Phases        |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   |
| Detector Phase          |                                                                                   | 5                                                                                 | 5                                                                                 |                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)     |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   |
| Minimum Split (s)       |                                                                                   | 12.6                                                                              | 12.6                                                                              |                                                                                   |
| Total Split (s)         |                                                                                   | 19.6                                                                              | 19.6                                                                              |                                                                                   |
| Total Split (%)         |                                                                                   | 22.1%                                                                             | 22.1%                                                                             |                                                                                   |
| Yellow Time (s)         |                                                                                   | 3.3                                                                               | 3.3                                                                               |                                                                                   |
| All-Red Time (s)        |                                                                                   | 4.3                                                                               | 4.3                                                                               |                                                                                   |
| Lost Time Adjust (s)    |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |
| Total Lost Time (s)     |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Recall Mode             |                                                                                   | None                                                                              | None                                                                              |                                                                                   |
| Act Effct Green (s)     |                                                                                   |                                                                                   | 5.4                                                                               |                                                                                   |
| Actuated g/C Ratio      |                                                                                   |                                                                                   | 0.12                                                                              |                                                                                   |
| v/c Ratio               |                                                                                   |                                                                                   | 0.07                                                                              |                                                                                   |
| Control Delay           |                                                                                   |                                                                                   | 24.5                                                                              |                                                                                   |
| Queue Delay             |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |
| Total Delay             |                                                                                   |                                                                                   | 24.5                                                                              |                                                                                   |
| LOS                     |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |
| Approach Delay          |                                                                                   |                                                                                   | 24.5                                                                              |                                                                                   |
| Approach LOS            |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |
| Queue Length 50th (ft)  |                                                                                   |                                                                                   | 3                                                                                 |                                                                                   |
| Queue Length 95th (ft)  |                                                                                   |                                                                                   | 18                                                                                |                                                                                   |
| Internal Link Dist (ft) |                                                                                   |                                                                                   | 615                                                                               |                                                                                   |

109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)

2017 Existing Conditions

Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBT                                                                               | EBR                                                                               | EBR2                                                                              | WBL2                                                                              | WBL                                                                               | WBT                                                                               | NWL2                                                                               | NWL                                                                                 | NWR                                                                                 | NWR2                                                                                | NEL                                                                                 | NET                                                                                 |
| Turn Bay Length (ft)   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)    | 1156                                                                              | 1504                                                                              |                                                                                   |                                                                                   |                                                                                   | 1829                                                                              |                                                                                    | 1951                                                                                |                                                                                     |                                                                                     |                                                                                     | 464                                                                                 |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     | 0                                                                                   |
| Reduced v/c Ratio      | 0.32                                                                              | 0.33                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.22                                                                              |                                                                                    | 0.22                                                                                |                                                                                     |                                                                                     |                                                                                     | 0.02                                                                                |

Intersection Summary

Area Type:

Other

Cycle Length: 88.8

Actuated Cycle Length: 46.4

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 11.8

Intersection LOS: B

Intersection Capacity Utilization 70.6%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases:

109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)/Route 58 (Tunxis Hill Cut

|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |  |  |  |  |
| Ø2                                                                                |                                                                                   |                                                                                   | Ø4                                                                                |                                                                                   |                                                                                   | Ø5                                                                                  |                                                                                     |                                                                                     |
| 35.8 s                                                                            |                                                                                   |                                                                                   | 33.4 s                                                                            |                                                                                   |                                                                                   | 19.6 s                                                                              |                                                                                     |                                                                                     |

|                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                        |  |  |  |  |
| Lane Group             | NER2                                                                              | SWL                                                                               | SWT                                                                               | SWR                                                                               |
| Turn Bay Length (ft)   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Base Capacity (vph)    | 457                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Starvation Cap Reductn | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Storage Cap Reductn    | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Reduced v/c Ratio      | 0.03                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |



201: Tunxis Hill Road & Route 58 (Tunxis Hill Cutoff)  
Lanes, Volumes, Timings

2017 Existing Conditions

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |  |
| Traffic Volume (vph)    | 415                                                                               | 10                                                                                | 34                                                                                | 388                                                                               | 3                                                                                 | 58                                                                                |
| Future Volume (vph)     | 415                                                                               | 10                                                                                | 34                                                                                | 388                                                                               | 3                                                                                 | 58                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 10                                                                                | 10                                                                                |
| Storage Length (ft)     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 50                                                                                |
| Storage Lanes           |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |
| Taper Length (ft)       |                                                                                   |                                                                                   | 25                                                                                |                                                                                   | 25                                                                                |                                                                                   |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.996                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |
| Flt Protected           |                                                                                   |                                                                                   |                                                                                   | 0.996                                                                             | 0.950                                                                             |                                                                                   |
| Satd. Flow (prot)       | 3374                                                                              | 0                                                                                 | 0                                                                                 | 1776                                                                              | 1636                                                                              | 1463                                                                              |
| Flt Permitted           |                                                                                   |                                                                                   |                                                                                   | 0.996                                                                             | 0.950                                                                             |                                                                                   |
| Satd. Flow (perm)       | 3374                                                                              | 0                                                                                 | 0                                                                                 | 1776                                                                              | 1636                                                                              | 1463                                                                              |
| Link Speed (mph)        | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                | 25                                                                                |                                                                                   |
| Link Distance (ft)      | 1095                                                                              |                                                                                   |                                                                                   | 214                                                                               | 782                                                                               |                                                                                   |
| Travel Time (s)         | 24.9                                                                              |                                                                                   |                                                                                   | 4.9                                                                               | 21.3                                                                              |                                                                                   |
| Peak Hour Factor        | 0.85                                                                              | 0.85                                                                              | 0.86                                                                              | 0.86                                                                              | 0.88                                                                              | 0.88                                                                              |
| Heavy Vehicles (%)      | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                |
| Adj. Flow (vph)         | 488                                                                               | 12                                                                                | 40                                                                                | 451                                                                               | 3                                                                                 | 66                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 500                                                                               | 0                                                                                 | 0                                                                                 | 491                                                                               | 3                                                                                 | 66                                                                                |
| Sign Control            | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 47.4% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↑↑   |      |      | ↑    | ↑    | ↑    |
| Traffic Vol, veh/h       | 415  | 10   | 34   | 388  | 3    | 58   |
| Future Vol, veh/h        | 415  | 10   | 34   | 388  | 3    | 58   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | 0    | 50   |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 85   | 85   | 86   | 86   | 88   | 88   |
| Heavy Vehicles, %        | 3    | 3    | 3    | 3    | 3    | 3    |
| Mvmt Flow                | 488  | 12   | 40   | 451  | 3    | 66   |

| Major/Minor          | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0      | 0      | 500    |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Critical Hdwy        | -      | -      | 4.145  |
| Critical Hdwy Stg 1  | -      | -      | -      |
| Critical Hdwy Stg 2  | -      | -      | -      |
| Follow-up Hdwy       | -      | -      | 2.2285 |
| Pot Cap-1 Maneuver   | -      | -      | 1056   |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | -      | -      | 1056   |
| Mov Cap-2 Maneuver   | -      | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |

| Approach             | EB | WB  | NB   |
|----------------------|----|-----|------|
| HCM Control Delay, s | 0  | 0.7 | 10.8 |
| HCM LOS              |    |     | B    |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | 232   | 748   | -   | -   | 1056  | -   |
| HCM Lane V/C Ratio    | 0.015 | 0.088 | -   | -   | 0.037 | -   |
| HCM Control Delay (s) | 20.7  | 10.3  | -   | -   | 8.5   | 0   |
| HCM Lane LOS          | C     | B     | -   | -   | A     | A   |
| HCM 95th %tile Q(veh) | 0     | 0.3   | -   | -   | 0.1   | -   |

202: Route 732 (Black Rock Turnpike) & Judd Street  
Lanes, Volumes, Timings

2017 Existing Conditions

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (vph)    | 20                                                                                | 61                                                                                | 46                                                                                | 383                                                                               | 457                                                                               | 26                                                                                |
| Future Volume (vph)     | 20                                                                                | 61                                                                                | 46                                                                                | 383                                                                               | 457                                                                               | 26                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Storage Length (ft)     | 0                                                                                 | 0                                                                                 | 25                                                                                |                                                                                   |                                                                                   | 0                                                                                 |
| Storage Lanes           | 1                                                                                 | 0                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 25                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.898                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.993                                                                             |                                                                                   |
| Flt Protected           | 0.988                                                                             |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1820                                                                              | 0                                                                                 | 0                                                                                 | 3421                                                                              | 1797                                                                              | 0                                                                                 |
| Flt Permitted           | 0.988                                                                             |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1820                                                                              | 0                                                                                 | 0                                                                                 | 3421                                                                              | 1797                                                                              | 0                                                                                 |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 586                                                                               |                                                                                   |                                                                                   | 395                                                                               | 218                                                                               |                                                                                   |
| Travel Time (s)         | 16.0                                                                              |                                                                                   |                                                                                   | 9.0                                                                               | 5.0                                                                               |                                                                                   |
| Peak Hour Factor        | 0.90                                                                              | 0.90                                                                              | 0.94                                                                              | 0.94                                                                              | 0.87                                                                              | 0.87                                                                              |
| Heavy Vehicles (%)      | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                |
| Adj. Flow (vph)         | 22                                                                                | 68                                                                                | 49                                                                                | 407                                                                               | 525                                                                               | 30                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 90                                                                                | 0                                                                                 | 0                                                                                 | 456                                                                               | 555                                                                               | 0                                                                                 |
| Sign Control            | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 52.4%

ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1.7

| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↔    |      |      | ↕    | ↕    |      |
| Traffic Vol, veh/h       | 20   | 61   | 46   | 383  | 457  | 26   |
| Future Vol, veh/h        | 20   | 61   | 46   | 383  | 457  | 26   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 0    | -    | 25   | -    | -    | -    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 90   | 90   | 94   | 94   | 87   | 87   |
| Heavy Vehicles, %        | 5    | 5    | 5    | 5    | 5    | 5    |
| Mvmt Flow                | 22   | 68   | 49   | 407  | 525  | 30   |

| Major/Minor          | Minor2 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 842    | 540    | 555    |
| Stage 1              | 540    | -      | -      |
| Stage 2              | 302    | -      | -      |
| Critical Hdwy        | 6.675  | 6.275  | 4.175  |
| Critical Hdwy Stg 1  | 5.475  | -      | -      |
| Critical Hdwy Stg 2  | 5.875  | -      | -      |
| Follow-up Hdwy       | 3.5475 | 3.3475 | 2.2475 |
| Pot Cap-1 Maneuver   | 313    | 534    | 996    |
| Stage 1              | 576    | -      | -      |
| Stage 2              | 717    | -      | -      |
| Platoon blocked, %   |        |        |        |
| Mov Cap-1 Maneuver   | 293    | 534    | 996    |
| Mov Cap-2 Maneuver   | 293    | -      | -      |
| Stage 1              | 576    | -      | -      |
| Stage 2              | 671    | -      | -      |

| Approach             | EB   | NB  | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 15.2 | 1.1 | 0  |
| HCM LOS              | C    |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 996   | -   | 444   | -   | -   |
| HCM Lane V/C Ratio    | 0.049 | -   | 0.203 | -   | -   |
| HCM Control Delay (s) | 8.8   | 0.2 | 15.2  | -   | -   |
| HCM Lane LOS          | A     | A   | C     | -   | -   |
| HCM 95th %tile Q(veh) | 0.2   | -   | 0.8   | -   | -   |



# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahoe Drive Existing Conditions Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 9                                                                                 | 0                                                                                 | 1                                                                                 | 51                                                                                | 4                                                                                 | 54                                                                                | 4                                                                                  | 757                                                                                 | 106                                                                                 | 121                                                                                 | 921                                                                                 | 5                                                                                   |
| Future Volume (vph)     | 9                                                                                 | 0                                                                                 | 1                                                                                 | 51                                                                                | 4                                                                                 | 54                                                                                | 4                                                                                  | 757                                                                                 | 106                                                                                 | 121                                                                                 | 921                                                                                 | 5                                                                                   |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                 | 13                                                                                  | 12                                                                                  | 12                                                                                  | 13                                                                                  | 12                                                                                  |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.989                                                                             |                                                                                   |                                                                                   | 0.933                                                                             |                                                                                   |                                                                                    | 0.984                                                                               |                                                                                     |                                                                                     | 0.999                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.956                                                                             |                                                                                   |                                                                                   | 0.977                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.994                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 1996                                                                              | 0                                                                                 | 0                                                                                 | 1924                                                                              | 0                                                                                 | 0                                                                                  | 1894                                                                                | 0                                                                                   | 0                                                                                   | 1911                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.724                                                                             |                                                                                   |                                                                                   | 0.844                                                                             |                                                                                   |                                                                                    | 0.996                                                                               |                                                                                     |                                                                                     | 0.796                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 1512                                                                              | 0                                                                                 | 0                                                                                 | 1662                                                                              | 0                                                                                 | 0                                                                                  | 1886                                                                                | 0                                                                                   | 0                                                                                   | 1531                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 43                                                                                |                                                                                   |                                                                                   | 59                                                                                |                                                                                   |                                                                                    | 21                                                                                  |                                                                                     |                                                                                     | 1                                                                                   |                                                                                     |
| Link Speed (mph)        |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 35                                                                                  |                                                                                     |                                                                                     | 35                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 378                                                                               |                                                                                   |                                                                                   | 442                                                                               |                                                                                   |                                                                                    | 1898                                                                                |                                                                                     |                                                                                     | 522                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 10.3                                                                              |                                                                                   |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                    | 37.0                                                                                |                                                                                     |                                                                                     | 10.2                                                                                |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                |
| Adj. Flow (vph)         | 11                                                                                | 0                                                                                 | 1                                                                                 | 56                                                                                | 4                                                                                 | 59                                                                                | 4                                                                                  | 823                                                                                 | 115                                                                                 | 139                                                                                 | 1059                                                                                | 6                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 12                                                                                | 0                                                                                 | 0                                                                                 | 119                                                                               | 0                                                                                 | 0                                                                                  | 942                                                                                 | 0                                                                                   | 0                                                                                   | 1204                                                                                | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                    | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Permitted Phases        | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   | 2                                                                                  |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 4                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |                                                                                   | 2                                                                                  | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 15.0                                                                               | 15.0                                                                                |                                                                                     | 15.0                                                                                | 15.0                                                                                |                                                                                     |
| Minimum Split (s)       | 11.7                                                                              | 11.7                                                                              |                                                                                   | 11.7                                                                              | 11.7                                                                              |                                                                                   | 20.6                                                                               | 20.6                                                                                |                                                                                     | 20.6                                                                                | 20.6                                                                                |                                                                                     |
| Total Split (s)         | 17.7                                                                              | 17.7                                                                              |                                                                                   | 17.7                                                                              | 17.7                                                                              |                                                                                   | 48.6                                                                               | 48.6                                                                                |                                                                                     | 48.6                                                                                | 48.6                                                                                |                                                                                     |
| Total Split (%)         | 26.7%                                                                             | 26.7%                                                                             |                                                                                   | 26.7%                                                                             | 26.7%                                                                             |                                                                                   | 73.3%                                                                              | 73.3%                                                                               |                                                                                     | 73.3%                                                                               | 73.3%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.3                                                                               | 3.3                                                                               |                                                                                   | 3.3                                                                               | 3.3                                                                               |                                                                                   | 4.0                                                                                | 4.0                                                                                 |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.4                                                                               | 1.4                                                                               |                                                                                   | 1.4                                                                               | 1.4                                                                               |                                                                                   | 1.6                                                                                | 1.6                                                                                 |                                                                                     | 1.6                                                                                 | 1.6                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                    | 5.6                                                                                 |                                                                                     |                                                                                     | 5.6                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              |                                                                                   | Min                                                                                | Min                                                                                 |                                                                                     | Min                                                                                 | Min                                                                                 |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 8.1                                                                               |                                                                                   |                                                                                   | 8.1                                                                               |                                                                                   |                                                                                    | 49.5                                                                                |                                                                                     |                                                                                     | 49.5                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.13                                                                              |                                                                                   |                                                                                   | 0.13                                                                              |                                                                                   |                                                                                    | 0.77                                                                                |                                                                                     |                                                                                     | 0.77                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.05                                                                              |                                                                                   |                                                                                   | 0.46                                                                              |                                                                                   |                                                                                    | 0.65                                                                                |                                                                                     |                                                                                     | 1.02                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 1.0                                                                               |                                                                                   |                                                                                   | 20.2                                                                              |                                                                                   |                                                                                    | 7.8                                                                                 |                                                                                     |                                                                                     | 47.4                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 1.0                                                                               |                                                                                   |                                                                                   | 20.2                                                                              |                                                                                   |                                                                                    | 7.8                                                                                 |                                                                                     |                                                                                     | 47.4                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 1.0                                                                               |                                                                                   |                                                                                   | 20.2                                                                              |                                                                                   |                                                                                    | 7.8                                                                                 |                                                                                     |                                                                                     | 47.4                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 20                                                                                |                                                                                   |                                                                                    | 143                                                                                 |                                                                                     |                                                                                     | ~518                                                                                |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 62                                                                                |                                                                                   |                                                                                    | 331                                                                                 |                                                                                     |                                                                                     | #769                                                                                |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 298                                                                               |                                                                                   |                                                                                   | 362                                                                               |                                                                                   |                                                                                    | 1818                                                                                |                                                                                     |                                                                                     | 442                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive Existing Conditions Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Base Capacity (vph)    |                                                                                   | 340                                                                               |                                                                                   |                                                                                   | 383                                                                               |                                                                                   |                                                                                    | 1453                                                                                |                                                                                     |                                                                                     | 1176                                                                                |                                                                                     |
| Starvation Cap Reductn |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   | 0.04                                                                              |                                                                                   |                                                                                   | 0.31                                                                              |                                                                                   |                                                                                    | 0.65                                                                                |                                                                                     |                                                                                     | 1.02                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 66.3

Actuated Cycle Length: 64.4

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 29.3

Intersection LOS: C

Intersection Capacity Utilization 121.1%

ICU Level of Service H

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

|                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø2  |  Ø4  |
| 48.6 s                                                                                 | 17.7 s                                                                                   |
|  Ø6 |  Ø8 |
| 48.6 s                                                                                 | 17.7 s                                                                                   |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

## Lanes, Volumes, Timings

2017 Existing Conditions

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |      |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3   |
| Lane Configurations     |  |  |  |  |  |  |      |
| Traffic Volume (vph)    | 168                                                                               | 325                                                                               | 127                                                                               | 763                                                                               | 893                                                                               | 83                                                                                |      |
| Future Volume (vph)     | 168                                                                               | 325                                                                               | 127                                                                               | 763                                                                               | 893                                                                               | 83                                                                                |      |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |      |
| Lane Width (ft)         | 10                                                                                | 10                                                                                | 11                                                                                | 11                                                                                | 12                                                                                | 12                                                                                |      |
| Storage Length (ft)     | 0                                                                                 | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   | 0                                                                                 |      |
| Storage Lanes           | 1                                                                                 | 1                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |      |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              |      |
| Frt                     |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.987                                                                             |                                                                                   |      |
| Flt Protected           | 0.950                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |      |
| Satd. Flow (prot)       | 1652                                                                              | 1478                                                                              | 1711                                                                              | 1801                                                                              | 3493                                                                              | 0                                                                                 |      |
| Flt Permitted           | 0.950                                                                             |                                                                                   | 0.200                                                                             |                                                                                   |                                                                                   |                                                                                   |      |
| Satd. Flow (perm)       | 1652                                                                              | 1478                                                                              | 360                                                                               | 1801                                                                              | 3493                                                                              | 0                                                                                 |      |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |      |
| Satd. Flow (RTOR)       |                                                                                   | 361                                                                               |                                                                                   |                                                                                   | 11                                                                                |                                                                                   |      |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 35                                                                                |                                                                                   |      |
| Link Distance (ft)      | 445                                                                               |                                                                                   |                                                                                   | 510                                                                               | 341                                                                               |                                                                                   |      |
| Travel Time (s)         | 12.1                                                                              |                                                                                   |                                                                                   | 11.6                                                                              | 6.6                                                                               |                                                                                   |      |
| Peak Hour Factor        | 0.90                                                                              | 0.90                                                                              | 0.88                                                                              | 0.88                                                                              | 0.95                                                                              | 0.95                                                                              |      |
| Adj. Flow (vph)         | 187                                                                               | 361                                                                               | 144                                                                               | 867                                                                               | 940                                                                               | 87                                                                                |      |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Group Flow (vph)   | 187                                                                               | 361                                                                               | 144                                                                               | 867                                                                               | 1027                                                                              | 0                                                                                 |      |
| Turn Type               | Prot                                                                              | Perm                                                                              | pm+pt                                                                             | NA                                                                                | NA                                                                                |                                                                                   |      |
| Protected Phases        | 4                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 | 2                                                                                 |                                                                                   | 3    |
| Permitted Phases        |                                                                                   | 4                                                                                 | 6                                                                                 |                                                                                   |                                                                                   |                                                                                   |      |
| Detector Phase          | 4                                                                                 | 4                                                                                 | 1                                                                                 | 6                                                                                 | 2                                                                                 |                                                                                   |      |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               | 5.0                                                                               | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0  |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              | 9.2                                                                               | 21.9                                                                              | 21.9                                                                              |                                                                                   | 22.0 |
| Total Split (s)         | 21.9                                                                              | 21.9                                                                              | 9.2                                                                               | 31.1                                                                              | 21.9                                                                              |                                                                                   | 22.0 |
| Total Split (%)         | 29.2%                                                                             | 29.2%                                                                             | 12.3%                                                                             | 41.5%                                                                             | 29.2%                                                                             |                                                                                   | 29%  |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               | 3.2                                                                               | 4.9                                                                               | 4.9                                                                               |                                                                                   | 4.0  |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 2.0                                                                               | 2.0                                                                               |                                                                                   | 0.0  |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               | 4.2                                                                               | 6.9                                                                               | 6.9                                                                               |                                                                                   |      |
| Lead/Lag                | Lag                                                                               | Lag                                                                               | Lead                                                                              |                                                                                   | Lag                                                                               |                                                                                   | Lead |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               |                                                                                   | Yes  |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                             | C-Max                                                                             |                                                                                   | None |
| Act Effect Green (s)    | 13.2                                                                              | 13.2                                                                              | 53.6                                                                              | 50.9                                                                              | 39.7                                                                              |                                                                                   |      |
| Actuated g/C Ratio      | 0.18                                                                              | 0.18                                                                              | 0.71                                                                              | 0.68                                                                              | 0.53                                                                              |                                                                                   |      |
| v/c Ratio               | 0.65                                                                              | 0.65                                                                              | 0.38                                                                              | 0.71                                                                              | 0.55                                                                              |                                                                                   |      |
| Control Delay           | 38.8                                                                              | 9.1                                                                               | 9.7                                                                               | 18.5                                                                              | 14.1                                                                              |                                                                                   |      |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Total Delay             | 38.8                                                                              | 9.1                                                                               | 9.7                                                                               | 18.5                                                                              | 14.1                                                                              |                                                                                   |      |
| LOS                     | D                                                                                 | A                                                                                 | A                                                                                 | B                                                                                 | B                                                                                 |                                                                                   |      |
| Approach Delay          | 19.2                                                                              |                                                                                   |                                                                                   | 17.2                                                                              | 14.1                                                                              |                                                                                   |      |
| Approach LOS            | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 | B                                                                                 |                                                                                   |      |
| Queue Length 50th (ft)  | 82                                                                                | 0                                                                                 | 37                                                                                | 323                                                                               | 151                                                                               |                                                                                   |      |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive Lanes, Volumes, Timings

2017 Existing Conditions

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |    |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3 |
| Queue Length 95th (ft)  | 134                                                                               | 64                                                                                | 68                                                                                | 466                                                                               | 257                                                                               |                                                                                   |    |
| Internal Link Dist (ft) | 365                                                                               |                                                                                   |                                                                                   | 430                                                                               | 261                                                                               |                                                                                   |    |
| Turn Bay Length (ft)    |                                                                                   | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   |                                                                                   |    |
| Base Capacity (vph)     | 395                                                                               | 628                                                                               | 383                                                                               | 1223                                                                              | 1855                                                                              |                                                                                   |    |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Reduced v/c Ratio       | 0.47                                                                              | 0.57                                                                              | 0.38                                                                              | 0.71                                                                              | 0.55                                                                              |                                                                                   |    |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 22 (29%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 16.4

Intersection LOS: B

Intersection Capacity Utilization 58.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

|                                                                                            |                                                                                           |                                                                                       |                                                                                         |
|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|  Ø1      |  Ø2 (R) |  Ø3 |  Ø4 |
| 9.2 s                                                                                      | 21.9 s                                                                                    | 22 s                                                                                  | 21.9 s                                                                                  |
|  Ø6 (R) |                                                                                           |                                                                                       |                                                                                         |
| 31.1 s                                                                                     |                                                                                           |                                                                                       |                                                                                         |



# 103: Route 58 (Black Rock Turnpike) & Brookside Drive

## Lanes, Volumes, Timings

2017 Existing Conditions

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (vph)    | 127                                                                               | 69                                                                                | 38                                                                                | 735                                                                               | 1106                                                                              | 157                                                                               |
| Future Volume (vph)     | 127                                                                               | 69                                                                                | 38                                                                                | 735                                                                               | 1106                                                                              | 157                                                                               |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              |
| Frt                     | 0.953                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.981                                                                             |                                                                                   |
| Flt Protected           | 0.969                                                                             |                                                                                   |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1950                                                                              | 0                                                                                 | 0                                                                                 | 3532                                                                              | 3472                                                                              | 0                                                                                 |
| Flt Permitted           | 0.969                                                                             |                                                                                   |                                                                                   | 0.838                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1950                                                                              | 0                                                                                 | 0                                                                                 | 2966                                                                              | 3472                                                                              | 0                                                                                 |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |
| Satd. Flow (RTOR)       | 36                                                                                |                                                                                   |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 347                                                                               |                                                                                   |                                                                                   | 293                                                                               | 336                                                                               |                                                                                   |
| Travel Time (s)         | 9.5                                                                               |                                                                                   |                                                                                   | 6.7                                                                               | 7.6                                                                               |                                                                                   |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              |
| Adj. Flow (vph)         | 159                                                                               | 86                                                                                | 39                                                                                | 758                                                                               | 1140                                                                              | 162                                                                               |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 245                                                                               | 0                                                                                 | 0                                                                                 | 797                                                                               | 1302                                                                              | 0                                                                                 |
| Turn Type               | Prot                                                                              |                                                                                   | pm+pt                                                                             | NA                                                                                | NA                                                                                |                                                                                   |
| Protected Phases        | 4                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                 | 6                                                                                 |                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Detector Phase          | 4                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                 | 6                                                                                 |                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)     | 9.0                                                                               |                                                                                   | 3.0                                                                               | 15.0                                                                              | 15.0                                                                              |                                                                                   |
| Minimum Split (s)       | 13.0                                                                              |                                                                                   | 8.9                                                                               | 20.4                                                                              | 20.4                                                                              |                                                                                   |
| Total Split (s)         | 25.0                                                                              |                                                                                   | 14.0                                                                              | 50.0                                                                              | 36.0                                                                              |                                                                                   |
| Total Split (%)         | 33.3%                                                                             |                                                                                   | 18.7%                                                                             | 66.7%                                                                             | 48.0%                                                                             |                                                                                   |
| Yellow Time (s)         | 3.0                                                                               |                                                                                   | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               |                                                                                   |
| All-Red Time (s)        | 1.0                                                                               |                                                                                   | 1.7                                                                               | 1.2                                                                               | 1.2                                                                               |                                                                                   |
| Lost Time Adjust (s)    | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |
| Total Lost Time (s)     | 4.0                                                                               |                                                                                   |                                                                                   | 5.4                                                                               | 5.4                                                                               |                                                                                   |
| Lead/Lag                |                                                                                   |                                                                                   | Lag                                                                               |                                                                                   | Lead                                                                              |                                                                                   |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   | Yes                                                                               |                                                                                   |
| Recall Mode             | None                                                                              |                                                                                   | None                                                                              | C-Max                                                                             | C-Max                                                                             |                                                                                   |
| Act Effect Green (s)    | 12.9                                                                              |                                                                                   |                                                                                   | 52.7                                                                              | 52.7                                                                              |                                                                                   |
| Actuated g/C Ratio      | 0.17                                                                              |                                                                                   |                                                                                   | 0.70                                                                              | 0.70                                                                              |                                                                                   |
| v/c Ratio               | 0.67                                                                              |                                                                                   |                                                                                   | 0.38                                                                              | 0.53                                                                              |                                                                                   |
| Control Delay           | 33.5                                                                              |                                                                                   |                                                                                   | 4.2                                                                               | 5.4                                                                               |                                                                                   |
| Queue Delay             | 0.0                                                                               |                                                                                   |                                                                                   | 0.2                                                                               | 0.0                                                                               |                                                                                   |
| Total Delay             | 33.5                                                                              |                                                                                   |                                                                                   | 4.4                                                                               | 5.4                                                                               |                                                                                   |
| LOS                     | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |
| Approach Delay          | 33.5                                                                              |                                                                                   |                                                                                   | 4.4                                                                               | 5.4                                                                               |                                                                                   |
| Approach LOS            | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |
| Queue Length 50th (ft)  | 92                                                                                |                                                                                   |                                                                                   | 62                                                                                | 215                                                                               |                                                                                   |
| Queue Length 95th (ft)  | 128                                                                               |                                                                                   |                                                                                   | 80                                                                                | 27                                                                                |                                                                                   |
| Internal Link Dist (ft) | 267                                                                               |                                                                                   |                                                                                   | 213                                                                               | 256                                                                               |                                                                                   |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

# 103: Route 58 (Black Rock Turnpike) & Brookside Drive Lanes, Volumes, Timings

2017 Existing Conditions  
Timing Plan: Weekday PM Peak

|                        |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Base Capacity (vph)    | 571                                                                               |                                                                                   |                                                                                   | 2083                                                                              | 2446                                                                              |                                                                                   |
| Starvation Cap Reductn | 0                                                                                 |                                                                                   |                                                                                   | 486                                                                               | 0                                                                                 |                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |
| Storage Cap Reductn    | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |
| Reduced v/c Ratio      | 0.43                                                                              |                                                                                   |                                                                                   | 0.50                                                                              | 0.53                                                                              |                                                                                   |

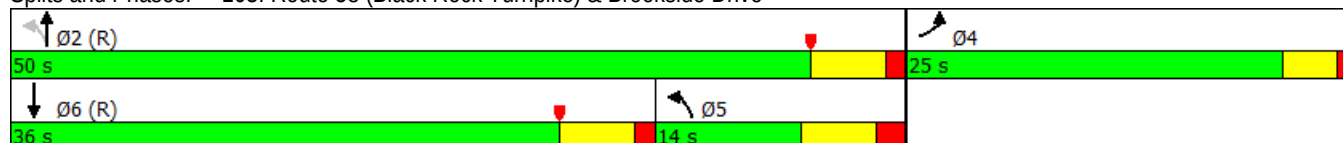
## Intersection Summary

Area Type: Other  
Cycle Length: 75  
Actuated Cycle Length: 75  
Offset: 45 (60%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow  
Natural Cycle: 60  
Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 0.67  
Intersection Signal Delay: 8.0  
Intersection Capacity Utilization 67.6%  
Analysis Period (min) 15

Intersection LOS: A

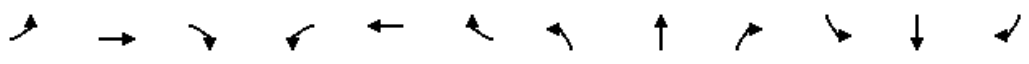
ICU Level of Service C

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive



# 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield 2017 Existing Conditions Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |       |       |       |       |       |       |       |      |       |       |      |
|-------------------------|------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|------|
| Lane Group              | EBL                                                                                | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
| Lane Configurations     |                                                                                    |       |       |       |       |       |       |       |      |       |       |      |
| Traffic Volume (vph)    | 27                                                                                 | 17    | 43    | 65    | 14    | 104   | 44    | 667   | 85   | 276   | 867   | 35   |
| Future Volume (vph)     | 27                                                                                 | 17    | 43    | 65    | 14    | 104   | 44    | 667   | 85   | 276   | 867   | 35   |
| Ideal Flow (vphpl)      | 1900                                                                               | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12                                                                                 | 12    | 12    | 12    | 12    | 11    | 12    | 11    | 12   | 12    | 11    | 12   |
| Storage Length (ft)     | 0                                                                                  |       | 0     | 0     |       | 75    | 0     |       | 0    | 0     |       | 0    |
| Storage Lanes           | 0                                                                                  |       | 1     | 0     |       | 1     | 0     |       | 0    | 0     |       | 0    |
| Taper Length (ft)       | 25                                                                                 |       |       | 25    |       |       | 25    |       |      | 25    |       |      |
| Lane Util. Factor       | 1.00                                                                               | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 0.95  | 0.95  | 0.95 | 0.95  | 0.95  | 0.95 |
| Frt                     |                                                                                    |       | 0.850 |       |       | 0.850 |       | 0.984 |      |       | 0.996 |      |
| Flt Protected           |                                                                                    | 0.970 |       |       | 0.961 |       |       | 0.997 |      |       | 0.988 |      |
| Satd. Flow (prot)       | 0                                                                                  | 1807  | 1583  | 0     | 1790  | 1531  | 0     | 3356  | 0    | 0     | 3367  | 0    |
| Flt Permitted           |                                                                                    | 0.791 |       |       | 0.727 |       |       | 0.828 |      |       | 0.612 |      |
| Satd. Flow (perm)       | 0                                                                                  | 1473  | 1583  | 0     | 1354  | 1531  | 0     | 2787  | 0    | 0     | 2085  | 0    |
| Right Turn on Red       |                                                                                    |       | Yes   |       |       | No    |       |       | Yes  |       |       | Yes  |
| Satd. Flow (RTOR)       |                                                                                    |       | 128   |       |       |       |       | 21    |      |       | 7     |      |
| Link Speed (mph)        |                                                                                    | 30    |       |       | 25    |       |       | 30    |      |       | 30    |      |
| Link Distance (ft)      |                                                                                    | 87    |       |       | 499   |       |       | 713   |      |       | 293   |      |
| Travel Time (s)         |                                                                                    | 2.0   |       |       | 13.6  |       |       | 16.2  |      |       | 6.7   |      |
| Peak Hour Factor        | 0.80                                                                               | 0.80  | 0.80  | 0.80  | 0.80  | 0.80  | 0.93  | 0.93  | 0.93 | 0.98  | 0.98  | 0.98 |
| Adj. Flow (vph)         | 34                                                                                 | 21    | 54    | 81    | 18    | 130   | 47    | 717   | 91   | 282   | 885   | 36   |
| Shared Lane Traffic (%) |                                                                                    |       |       |       |       |       |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 0                                                                                  | 55    | 54    | 0     | 99    | 130   | 0     | 855   | 0    | 0     | 1203  | 0    |
| Turn Type               | Perm                                                                               | NA    | Perm  | Perm  | NA    | Perm  | Perm  | NA    |      | pm+pt | NA    |      |
| Protected Phases        |                                                                                    | 4     |       |       | 8     |       |       | 2     |      | 1     | 6     |      |
| Permitted Phases        | 4                                                                                  |       | 4     | 8     |       | 8     | 2     |       |      | 6     |       |      |
| Detector Phase          | 4                                                                                  | 4     | 4     | 8     | 8     | 8     | 2     | 2     |      | 1     | 6     |      |
| Switch Phase            |                                                                                    |       |       |       |       |       |       |       |      |       |       |      |
| Minimum Initial (s)     | 9.0                                                                                | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 15.0  | 15.0  |      | 3.0   | 15.0  |      |
| Minimum Split (s)       | 13.0                                                                               | 13.0  | 13.0  | 13.0  | 13.0  | 13.0  | 20.3  | 20.3  |      | 9.5   | 20.3  |      |
| Total Split (s)         | 25.0                                                                               | 25.0  | 25.0  | 25.0  | 25.0  | 25.0  | 36.0  | 36.0  |      | 14.0  | 50.0  |      |
| Total Split (%)         | 33.3%                                                                              | 33.3% | 33.3% | 33.3% | 33.3% | 33.3% | 48.0% | 48.0% |      | 18.7% | 66.7% |      |
| Yellow Time (s)         | 3.0                                                                                | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 4.3   | 4.3   |      | 4.3   | 4.3   |      |
| All-Red Time (s)        | 1.0                                                                                | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |      | 2.2   | 1.0   |      |
| Lost Time Adjust (s)    |                                                                                    | 0.0   | 0.0   |       | 0.0   | 0.0   |       | 0.0   |      |       | 0.0   |      |
| Total Lost Time (s)     |                                                                                    | 4.0   | 4.0   |       | 4.0   | 4.0   |       | 5.3   |      |       | 5.3   |      |
| Lead/Lag                |                                                                                    |       |       |       |       |       | Lead  | Lead  |      | Lag   |       |      |
| Lead-Lag Optimize?      |                                                                                    |       |       |       |       |       | Yes   | Yes   |      | Yes   |       |      |
| Recall Mode             | None                                                                               | None  | None  | None  | None  | None  | C-Max | C-Max |      | None  | C-Max |      |
| Act Effect Green (s)    |                                                                                    | 11.4  | 11.4  |       | 11.4  | 11.4  |       | 54.3  |      |       | 54.3  |      |
| Actuated g/C Ratio      |                                                                                    | 0.15  | 0.15  |       | 0.15  | 0.15  |       | 0.72  |      |       | 0.72  |      |
| v/c Ratio               |                                                                                    | 0.25  | 0.15  |       | 0.48  | 0.56  |       | 0.42  |      |       | 0.80  |      |
| Control Delay           |                                                                                    | 29.7  | 1.0   |       | 36.5  | 38.5  |       | 5.1   |      |       | 9.8   |      |
| Queue Delay             |                                                                                    | 0.0   | 0.0   |       | 0.0   | 0.0   |       | 0.0   |      |       | 0.0   |      |
| Total Delay             |                                                                                    | 29.7  | 1.0   |       | 36.5  | 38.5  |       | 5.1   |      |       | 9.8   |      |
| LOS                     |                                                                                    | C     | A     |       | D     | D     |       | A     |      |       | A     |      |
| Approach Delay          |                                                                                    | 15.4  |       |       | 37.6  |       |       | 5.1   |      |       | 9.8   |      |
| Approach LOS            |                                                                                    | B     |       |       | D     |       |       | A     |      |       | A     |      |
| Queue Length 50th (ft)  |                                                                                    | 23    | 0     |       | 43    | 58    |       | 61    |      |       | 96    |      |

# 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 45                                                                                | 0                                                                                 |                                                                                   | 72                                                                                | 89                                                                                |                                                                                    | 116                                                                                 |                                                                                     |                                                                                     | #390                                                                                |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 7                                                                                 |                                                                                   |                                                                                   | 419                                                                               |                                                                                   |                                                                                    | 633                                                                                 |                                                                                     |                                                                                     | 213                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 75                                                                                |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 412                                                                               | 535                                                                               |                                                                                   | 379                                                                               | 428                                                                               |                                                                                    | 2023                                                                                |                                                                                     |                                                                                     | 1511                                                                                |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.13                                                                              | 0.10                                                                              |                                                                                   | 0.26                                                                              | 0.30                                                                              |                                                                                    | 0.42                                                                                |                                                                                     |                                                                                     | 0.80                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 48 (64%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 11.0

Intersection LOS: B

Intersection Capacity Utilization 78.7%

ICU Level of Service D

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road

|                                                                                            |                                                                                        |                                                                                          |
|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø2 (R) |  Ø1 |  Ø4 |
| 36 s                                                                                       | 14 s                                                                                   | 25 s                                                                                     |
|  Ø6 (R) |                                                                                        |  Ø8 |
| 50 s                                                                                       |                                                                                        | 25 s                                                                                     |



# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Existing Conditions

## Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (vph)    | 85                                                                                | 747                                                                               | 148                                                                               | 140                                                                               | 590                                                                               | 124                                                                               | 219                                                                                | 263                                                                                 | 167                                                                                 | 178                                                                                 | 255                                                                                 | 42                                                                                  |
| Future Volume (vph)     | 85                                                                                | 747                                                                               | 148                                                                               | 140                                                                               | 590                                                                               | 124                                                                               | 219                                                                                | 263                                                                                 | 167                                                                                 | 178                                                                                 | 255                                                                                 | 42                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 11                                                                                | 11                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                 | 11                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 200                                                                               |                                                                                   | 0                                                                                 | 175                                                                               |                                                                                   | 0                                                                                 | 210                                                                                |                                                                                     | 0                                                                                   | 170                                                                                 |                                                                                     | 0                                                                                   |
| Storage Lanes           | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                  |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 85                                                                                |                                                                                   |                                                                                   | 75                                                                                |                                                                                   |                                                                                   | 100                                                                                |                                                                                     |                                                                                     | 100                                                                                 |                                                                                     |                                                                                     |
| Lane Util. Factor       | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.975                                                                             |                                                                                   |                                                                                   | 0.974                                                                             |                                                                                   |                                                                                    | 0.942                                                                               |                                                                                     |                                                                                     | 0.979                                                                               |                                                                                     |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                              |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1711                                                                              | 3336                                                                              | 0                                                                                 | 1711                                                                              | 3447                                                                              | 0                                                                                 | 1711                                                                               | 1696                                                                                | 0                                                                                   | 1770                                                                                | 1824                                                                                | 0                                                                                   |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.254                                                                              |                                                                                     |                                                                                     | 0.142                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 1711                                                                              | 3336                                                                              | 0                                                                                 | 1711                                                                              | 3447                                                                              | 0                                                                                 | 457                                                                                | 1696                                                                                | 0                                                                                   | 265                                                                                 | 1824                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | No                                                                                  |
| Satd. Flow (RTOR)       |                                                                                   | 14                                                                                |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                    | 19                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 436                                                                               |                                                                                   |                                                                                   | 368                                                                               |                                                                                   |                                                                                    | 438                                                                                 |                                                                                     |                                                                                     | 355                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.9                                                                               |                                                                                   |                                                                                   | 8.4                                                                               |                                                                                   |                                                                                    | 10.0                                                                                |                                                                                     |                                                                                     | 9.7                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.89                                                                               | 0.89                                                                                | 0.89                                                                                | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                |
| Adj. Flow (vph)         | 90                                                                                | 795                                                                               | 157                                                                               | 144                                                                               | 608                                                                               | 128                                                                               | 246                                                                                | 296                                                                                 | 188                                                                                 | 205                                                                                 | 293                                                                                 | 48                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 90                                                                                | 952                                                                               | 0                                                                                 | 144                                                                               | 736                                                                               | 0                                                                                 | 246                                                                                | 484                                                                                 | 0                                                                                   | 205                                                                                 | 341                                                                                 | 0                                                                                   |
| Turn Type               | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | NA                                                                                |                                                                                   | pm+pt                                                                              | NA                                                                                  |                                                                                     | pm+pt                                                                               | NA                                                                                  |                                                                                     |
| Protected Phases        | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 7                                                                                  | 4                                                                                   |                                                                                     | 3                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 4                                                                                  |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 7                                                                                  | 4                                                                                   |                                                                                     | 3                                                                                   | 8                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 15.0                                                                              |                                                                                   | 5.0                                                                               | 15.0                                                                              |                                                                                   | 5.0                                                                                | 10.0                                                                                |                                                                                     | 5.0                                                                                 | 10.0                                                                                |                                                                                     |
| Minimum Split (s)       | 9.7                                                                               | 21.6                                                                              |                                                                                   | 9.7                                                                               | 21.6                                                                              |                                                                                   | 9.3                                                                                | 16.8                                                                                |                                                                                     | 9.3                                                                                 | 16.8                                                                                |                                                                                     |
| Total Split (s)         | 17.7                                                                              | 41.6                                                                              |                                                                                   | 17.7                                                                              | 41.6                                                                              |                                                                                   | 22.3                                                                               | 36.8                                                                                |                                                                                     | 22.3                                                                                | 36.8                                                                                |                                                                                     |
| Total Split (%)         | 11.7%                                                                             | 27.5%                                                                             |                                                                                   | 11.7%                                                                             | 27.5%                                                                             |                                                                                   | 14.7%                                                                              | 24.3%                                                                               |                                                                                     | 14.7%                                                                               | 24.3%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.0                                                                               | 4.1                                                                               |                                                                                   | 3.0                                                                               | 4.1                                                                               |                                                                                   | 3.3                                                                                | 4.4                                                                                 |                                                                                     | 3.3                                                                                 | 4.4                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.7                                                                               | 2.5                                                                               |                                                                                   | 1.7                                                                               | 2.5                                                                               |                                                                                   | 1.0                                                                                | 2.4                                                                                 |                                                                                     | 1.0                                                                                 | 2.4                                                                                 |                                                                                     |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     | 4.7                                                                               | 6.6                                                                               |                                                                                   | 4.7                                                                               | 6.6                                                                               |                                                                                   | 4.3                                                                                | 6.8                                                                                 |                                                                                     | 4.3                                                                                 | 6.8                                                                                 |                                                                                     |
| Lead/Lag                | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                               | Lag                                                                                 |                                                                                     | Lead                                                                                | Lag                                                                                 |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                | Yes                                                                                 |                                                                                     | Yes                                                                                 | Yes                                                                                 |                                                                                     |
| Recall Mode             | None                                                                              | Min                                                                               |                                                                                   | None                                                                              | Min                                                                               |                                                                                   | None                                                                               | None                                                                                |                                                                                     | None                                                                                | None                                                                                |                                                                                     |
| Act Effct Green (s)     | 10.1                                                                              | 35.0                                                                              |                                                                                   | 13.0                                                                              | 37.9                                                                              |                                                                                   | 51.1                                                                               | 31.7                                                                                |                                                                                     | 44.7                                                                                | 28.2                                                                                |                                                                                     |
| Actuated g/C Ratio      | 0.09                                                                              | 0.30                                                                              |                                                                                   | 0.11                                                                              | 0.33                                                                              |                                                                                   | 0.44                                                                               | 0.27                                                                                |                                                                                     | 0.39                                                                                | 0.24                                                                                |                                                                                     |
| v/c Ratio               | 0.60                                                                              | 0.94                                                                              |                                                                                   | 0.75                                                                              | 0.65                                                                              |                                                                                   | 0.63                                                                               | 1.01                                                                                |                                                                                     | 0.73                                                                                | 0.77                                                                                |                                                                                     |
| Control Delay           | 68.3                                                                              | 56.2                                                                              |                                                                                   | 75.1                                                                              | 36.8                                                                              |                                                                                   | 28.4                                                                               | 86.1                                                                                |                                                                                     | 38.8                                                                                | 53.7                                                                                |                                                                                     |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Delay             | 68.3                                                                              | 56.2                                                                              |                                                                                   | 75.1                                                                              | 36.8                                                                              |                                                                                   | 28.4                                                                               | 86.1                                                                                |                                                                                     | 38.8                                                                                | 53.7                                                                                |                                                                                     |
| LOS                     | E                                                                                 | E                                                                                 |                                                                                   | E                                                                                 | D                                                                                 |                                                                                   | C                                                                                  | F                                                                                   |                                                                                     | D                                                                                   | D                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 57.2                                                                              |                                                                                   |                                                                                   | 43.1                                                                              |                                                                                   |                                                                                    | 66.7                                                                                |                                                                                     |                                                                                     | 48.1                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | E                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Queue Length 50th (ft)  | 67                                                                                | 368                                                                               |                                                                                   | 108                                                                               | 249                                                                               |                                                                                   | 115                                                                                | 352                                                                                 |                                                                                     | 93                                                                                  | 240                                                                                 |                                                                                     |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Existing Conditions Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |      |
|-------------------------|------|
| Lane Group              | Ø9   |
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 33.0 |
| Total Split (s)         | 33.0 |
| Total Split (%)         | 22%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Existing Conditions Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  | 120                                                                               | #508                                                                              |                                                                                   | #213                                                                              | 330                                                                               |                                                                                   | 173                                                                                | #608                                                                                |                                                                                     | 157                                                                                 | 335                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 356                                                                               |                                                                                   |                                                                                   | 288                                                                               |                                                                                   |                                                                                    | 358                                                                                 |                                                                                     |                                                                                     | 275                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 200                                                                               |                                                                                   |                                                                                   | 175                                                                               |                                                                                   |                                                                                   | 210                                                                                |                                                                                     |                                                                                     | 170                                                                                 |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 191                                                                               | 1016                                                                              |                                                                                   | 191                                                                               | 1135                                                                              |                                                                                   | 395                                                                                | 477                                                                                 |                                                                                     | 344                                                                                 | 471                                                                                 |                                                                                     |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       | 0.47                                                                              | 0.94                                                                              |                                                                                   | 0.75                                                                              | 0.65                                                                              |                                                                                   | 0.62                                                                               | 1.01                                                                                |                                                                                     | 0.60                                                                                | 0.72                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 151.4

Actuated Cycle Length: 116.1

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 53.9

Intersection LOS: D

Intersection Capacity Utilization 85.7%

ICU Level of Service E

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)

|                                                                                        |                                                                                        |                                                                                        |                                                                                         |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø9 |  Ø3 |  Ø4 |
| 17.7 s                                                                                 | 41.6 s                                                                                 | 33 s                                                                                   | 22.3 s                                                                                  | 36.8 s                                                                                   |
|  Ø5 |  Ø6 |                                                                                        |  Ø7 |  Ø8 |
| 17.7 s                                                                                 | 41.6 s                                                                                 |                                                                                        | 22.3 s                                                                                  | 36.8 s                                                                                   |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø9 |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |



# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & R2017 SR (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |  |
| Traffic Volume (vph)    | 70                                                                                | 826                                                                               | 21                                                                                | 73                                                                                | 640                                                                               | 59                                                                                | 163                                                                                | 11                                                                                  | 109                                                                                 | 45                                                                                  | 5                                                                                   | 29                                                                                  |
| Future Volume (vph)     | 70                                                                                | 826                                                                               | 21                                                                                | 73                                                                                | 640                                                                               | 59                                                                                | 163                                                                                | 11                                                                                  | 109                                                                                 | 45                                                                                  | 5                                                                                   | 29                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                 | 13                                                                                  | 13                                                                                  | 12                                                                                  | 13                                                                                  | 13                                                                                  |
| Storage Length (ft)     | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 25                                                                                  | 0                                                                                   |                                                                                     | 25                                                                                  |
| Storage Lanes           | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 1                                                                                   | 0                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)       | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                   | 0.988                                                                             |                                                                                   |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected           |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                    | 0.955                                                                               |                                                                                     |                                                                                     | 0.957                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3397                                                                              | 0                                                                                 | 0                                                                                 | 3363                                                                              | 0                                                                                 | 0                                                                                  | 1838                                                                                | 1636                                                                                | 0                                                                                   | 1842                                                                                | 1636                                                                                |
| Flt Permitted           |                                                                                   | 0.777                                                                             |                                                                                   |                                                                                   | 0.750                                                                             |                                                                                   |                                                                                    | 0.697                                                                               |                                                                                     |                                                                                     | 0.691                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 2650                                                                              | 0                                                                                 | 0                                                                                 | 2535                                                                              | 0                                                                                 | 0                                                                                  | 1342                                                                                | 1636                                                                                | 0                                                                                   | 1330                                                                                | 1636                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 12                                                                                |                                                                                   |                                                                                    |                                                                                     | 157                                                                                 |                                                                                     |                                                                                     | 157                                                                                 |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 442                                                                               |                                                                                   |                                                                                   | 502                                                                               |                                                                                   |                                                                                    | 142                                                                                 |                                                                                     |                                                                                     | 135                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                    | 3.9                                                                                 |                                                                                     |                                                                                     | 3.7                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.84                                                                               | 0.84                                                                                | 0.84                                                                                | 0.85                                                                                | 0.85                                                                                | 0.85                                                                                |
| Adj. Flow (vph)         | 75                                                                                | 888                                                                               | 23                                                                                | 81                                                                                | 711                                                                               | 66                                                                                | 194                                                                                | 13                                                                                  | 130                                                                                 | 53                                                                                  | 6                                                                                   | 34                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 986                                                                               | 0                                                                                 | 0                                                                                 | 858                                                                               | 0                                                                                 | 0                                                                                  | 207                                                                                 | 130                                                                                 | 0                                                                                   | 59                                                                                  | 34                                                                                  |
| Turn Type               | pm+pt                                                                             | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  | Perm                                                                                | Perm                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases        | 1                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                  |                                                                                     | 4                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   |
| Detector Phase          | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                  | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0                                                                                | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |
| Minimum Split (s)       | 9.0                                                                               | 20.8                                                                              |                                                                                   | 20.8                                                                              | 20.8                                                                              |                                                                                   | 11.0                                                                               | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                |
| Total Split (s)         | 9.0                                                                               | 39.0                                                                              |                                                                                   | 30.0                                                                              | 30.0                                                                              |                                                                                   | 14.0                                                                               | 14.0                                                                                | 14.0                                                                                | 14.0                                                                                | 14.0                                                                                | 14.0                                                                                |
| Total Split (%)         | 12.0%                                                                             | 52.0%                                                                             |                                                                                   | 40.0%                                                                             | 40.0%                                                                             |                                                                                   | 18.7%                                                                              | 18.7%                                                                               | 18.7%                                                                               | 18.7%                                                                               | 18.7%                                                                               | 18.7%                                                                               |
| Yellow Time (s)         | 3.0                                                                               | 4.3                                                                               |                                                                                   | 4.3                                                                               | 4.3                                                                               |                                                                                   | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| All-Red Time (s)        | 1.0                                                                               | 1.5                                                                               |                                                                                   | 1.5                                                                               | 1.5                                                                               |                                                                                   | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     |                                                                                   | 5.8                                                                               |                                                                                   |                                                                                   | 5.8                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 | 4.0                                                                                 |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |
| Lead/Lag                | Lead                                                                              |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               |                                                                                   | Lag                                                                                | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode             | Min                                                                               | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Act Effct Green (s)     |                                                                                   | 44.5                                                                              |                                                                                   |                                                                                   | 35.0                                                                              |                                                                                   |                                                                                    | 20.7                                                                                | 20.7                                                                                |                                                                                     | 20.7                                                                                | 20.7                                                                                |
| Actuated g/C Ratio      |                                                                                   | 0.59                                                                              |                                                                                   |                                                                                   | 0.47                                                                              |                                                                                   |                                                                                    | 0.28                                                                                | 0.28                                                                                |                                                                                     | 0.28                                                                                | 0.28                                                                                |
| v/c Ratio               |                                                                                   | 0.61                                                                              |                                                                                   |                                                                                   | 0.72                                                                              |                                                                                   |                                                                                    | 0.56                                                                                | 0.23                                                                                |                                                                                     | 0.16                                                                                | 0.06                                                                                |
| Control Delay           |                                                                                   | 11.3                                                                              |                                                                                   |                                                                                   | 11.6                                                                              |                                                                                   |                                                                                    | 30.2                                                                                | 3.7                                                                                 |                                                                                     | 22.2                                                                                | 0.2                                                                                 |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             |                                                                                   | 11.3                                                                              |                                                                                   |                                                                                   | 11.6                                                                              |                                                                                   |                                                                                    | 30.2                                                                                | 3.7                                                                                 |                                                                                     | 22.2                                                                                | 0.2                                                                                 |
| LOS                     |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | C                                                                                   | A                                                                                   |                                                                                     | C                                                                                   | A                                                                                   |
| Approach Delay          |                                                                                   | 11.3                                                                              |                                                                                   |                                                                                   | 11.6                                                                              |                                                                                   |                                                                                    | 19.9                                                                                |                                                                                     |                                                                                     | 14.1                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 119                                                                               |                                                                                   |                                                                                   | 65                                                                                |                                                                                   |                                                                                    | 84                                                                                  | 0                                                                                   |                                                                                     | 21                                                                                  | 0                                                                                   |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & R2017 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

| Lane Group              | Ø3   |
|-------------------------|------|
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 3    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 22.0 |
| Total Split (s)         | 22.0 |
| Total Split (%)         | 29%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                | Lead |
| Lead-Lag Optimize?      | Yes  |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 171                                                                               |                                                                                   |                                                                                   | 83                                                                                |                                                                                   |                                                                                    | 135                                                                                 | 21                                                                                  |                                                                                     | 46                                                                                  | 0                                                                                   |
| Internal Link Dist (ft) |                                                                                   | 362                                                                               |                                                                                   |                                                                                   | 422                                                                               |                                                                                   |                                                                                    | 62                                                                                  |                                                                                     |                                                                                     | 55                                                                                  |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |
| Base Capacity (vph)     |                                                                                   | 1609                                                                              |                                                                                   |                                                                                   | 1188                                                                              |                                                                                   |                                                                                    | 371                                                                                 | 566                                                                                 |                                                                                     | 367                                                                                 | 566                                                                                 |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       |                                                                                   | 0.61                                                                              |                                                                                   |                                                                                   | 0.72                                                                              |                                                                                   |                                                                                    | 0.56                                                                                | 0.23                                                                                |                                                                                     | 0.16                                                                                | 0.06                                                                                |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 19 (25%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 12.8

Intersection LOS: B

Intersection Capacity Utilization 76.5%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)

|  Ø1      |  Ø2 (R) |  Ø3 |  Ø4 |
|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 9 s                                                                                        | 30 s                                                                                      | 22 s                                                                                  | 14 s                                                                                    |
|  Ø6 (R) |                                                                                           |                                                                                       |                                                                                         |
| 39 s                                                                                       |                                                                                           |                                                                                       |                                                                                         |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø3 |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |



# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) 2017 Existing Conditions Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                   |  |  |  |  |                                                                                     |
| Traffic Volume (vph)    | 10                                                                                | 934                                                                               | 101                                                                               | 45                                                                                | 722                                                                               | 2                                                                                 | 100                                                                               | 3                                                                                   | 63                                                                                  | 1                                                                                   | 3                                                                                   | 9                                                                                   |
| Future Volume (vph)     | 10                                                                                | 934                                                                               | 101                                                                               | 45                                                                                | 722                                                                               | 2                                                                                 | 100                                                                               | 3                                                                                   | 63                                                                                  | 1                                                                                   | 3                                                                                   | 9                                                                                   |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 10                                                                                  | 10                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                     | 250                                                                                 | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes           | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.985                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | 0.850                                                                               |                                                                                     | 0.890                                                                               |                                                                                     |
| Flt Protected           |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                   | 0.954                                                                               |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3370                                                                              | 0                                                                                 | 0                                                                                 | 3411                                                                              | 0                                                                                 | 0                                                                                 | 1659                                                                                | 1478                                                                                | 1770                                                                                | 1658                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.820                                                                             |                                                                                   |                                                                                   | 0.722                                                                               |                                                                                     | 0.675                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 3201                                                                              | 0                                                                                 | 0                                                                                 | 2805                                                                              | 0                                                                                 | 0                                                                                 | 1255                                                                                | 1478                                                                                | 1257                                                                                | 1658                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 31                                                                                |                                                                                   |                                                                                   | 1                                                                                 |                                                                                   |                                                                                   |                                                                                     | 111                                                                                 |                                                                                     | 11                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 502                                                                               |                                                                                   |                                                                                   | 407                                                                               |                                                                                   |                                                                                   | 423                                                                                 |                                                                                     |                                                                                     | 198                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                   | 11.5                                                                                |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.82                                                                              | 0.82                                                                                | 0.82                                                                                | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                |
| Adj. Flow (vph)         | 11                                                                                | 1004                                                                              | 109                                                                               | 47                                                                                | 752                                                                               | 2                                                                                 | 122                                                                               | 4                                                                                   | 77                                                                                  | 1                                                                                   | 4                                                                                   | 11                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 1124                                                                              | 0                                                                                 | 0                                                                                 | 801                                                                               | 0                                                                                 | 0                                                                                 | 126                                                                                 | 77                                                                                  | 1                                                                                   | 15                                                                                  | 0                                                                                   |
| Turn Type               | pm+pt                                                                             | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                  | Perm                                                                                | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        | 1                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                     | 4                                                                                   | 4                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 3.0                                                                               | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0                                                                               | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 7.3                                                                               | 21.3                                                                              |                                                                                   | 21.3                                                                              | 21.3                                                                              |                                                                                   | 11.9                                                                              | 11.9                                                                                | 11.9                                                                                | 11.9                                                                                | 11.9                                                                                |                                                                                     |
| Total Split (s)         | 7.3                                                                               | 55.0                                                                              |                                                                                   | 47.7                                                                              | 47.7                                                                              |                                                                                   | 20.0                                                                              | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                |                                                                                     |
| Total Split (%)         | 9.7%                                                                              | 73.3%                                                                             |                                                                                   | 63.6%                                                                             | 63.6%                                                                             |                                                                                   | 26.7%                                                                             | 26.7%                                                                               | 26.7%                                                                               | 26.7%                                                                               | 26.7%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.3                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.0                                                                               | 1.3                                                                               |                                                                                   | 1.3                                                                               | 1.3                                                                               |                                                                                   | 1.9                                                                               | 1.9                                                                                 | 1.9                                                                                 | 1.9                                                                                 | 1.9                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 6.3                                                                               |                                                                                   |                                                                                   | 6.3                                                                               |                                                                                   |                                                                                   | 4.9                                                                                 | 4.9                                                                                 | 4.9                                                                                 | 4.9                                                                                 |                                                                                     |
| Lead/Lag                | Lead                                                                              |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | Max                                                                               | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                              | None                                                                                | None                                                                                | None                                                                                | None                                                                                |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 55.1                                                                              |                                                                                   |                                                                                   | 41.4                                                                              |                                                                                   |                                                                                   | 11.1                                                                                | 11.1                                                                                | 11.1                                                                                | 11.1                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.73                                                                              |                                                                                   |                                                                                   | 0.55                                                                              |                                                                                   |                                                                                   | 0.15                                                                                | 0.15                                                                                | 0.15                                                                                | 0.15                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.47                                                                              |                                                                                   |                                                                                   | 0.52                                                                              |                                                                                   |                                                                                   | 0.68                                                                                | 0.25                                                                                | 0.01                                                                                | 0.06                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 3.4                                                                               |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   | 48.2                                                                                | 4.7                                                                                 | 25.0                                                                                | 16.3                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 3.4                                                                               |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   | 48.2                                                                                | 4.7                                                                                 | 25.0                                                                                | 16.3                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | D                                                                                   | A                                                                                   | C                                                                                   | B                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 3.4                                                                               |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   | 31.7                                                                                |                                                                                     |                                                                                     | 16.9                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 54                                                                                |                                                                                   |                                                                                   | 43                                                                                |                                                                                   |                                                                                   | 56                                                                                  | 0                                                                                   | 0                                                                                   | 2                                                                                   |                                                                                     |

# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) 2017 Existing Conditions Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 77                                                                                |                                                                                   |                                                                                   | 53                                                                                |                                                                                   |                                                                                    | 93                                                                                  | 13                                                                                  | 4                                                                                   | 14                                                                                  |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 422                                                                               |                                                                                   |                                                                                   | 327                                                                               |                                                                                   |                                                                                    | 343                                                                                 |                                                                                     |                                                                                     | 118                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 250                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 2376                                                                              |                                                                                   |                                                                                   | 1548                                                                              |                                                                                   |                                                                                    | 252                                                                                 | 386                                                                                 | 253                                                                                 | 342                                                                                 |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.47                                                                              |                                                                                   |                                                                                   | 0.52                                                                              |                                                                                   |                                                                                    | 0.50                                                                                | 0.20                                                                                | 0.00                                                                                | 0.04                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 21 (28%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 7.5

Intersection LOS: A

Intersection Capacity Utilization 75.5%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                           |                                                                                         |
|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|  Ø1      |  Ø2 (R) |  Ø4 |
| 7.3 s                                                                                      | 47.7 s                                                                                    | 20 s                                                                                    |
|  Ø6 (R) |                                                                                           |                                                                                         |
| 55 s                                                                                       |                                                                                           |                                                                                         |

## 108: Burroughs Road &amp; Route 58 (Black Rock Turnpike)

## 2017 Existing Conditions

## Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 81                                                                                | 919                                                                               | 14                                                                                | 7                                                                                 | 704                                                                               | 147                                                                               | 17                                                                                | 104                                                                                 | 7                                                                                   | 122                                                                                 | 49                                                                                  | 49                                                                                  |
| Future Volume (vph)     | 81                                                                                | 919                                                                               | 14                                                                                | 7                                                                                 | 704                                                                               | 147                                                                               | 17                                                                                | 104                                                                                 | 7                                                                                   | 122                                                                                 | 49                                                                                  | 49                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 16                                                                                  | 12                                                                                  | 12                                                                                  | 16                                                                                  | 12                                                                                  |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   | 0.974                                                                             |                                                                                   |                                                                                   | 0.992                                                                               |                                                                                     |                                                                                     | 0.970                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.993                                                                               |                                                                                     |                                                                                     | 0.973                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3401                                                                              | 0                                                                                 | 0                                                                                 | 3332                                                                              | 0                                                                                 | 0                                                                                 | 2080                                                                                | 0                                                                                   | 0                                                                                   | 1992                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.787                                                                             |                                                                                   |                                                                                   | 0.946                                                                             |                                                                                   |                                                                                   | 0.942                                                                               |                                                                                     |                                                                                     | 0.745                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 2687                                                                              | 0                                                                                 | 0                                                                                 | 3152                                                                              | 0                                                                                 | 0                                                                                 | 1973                                                                                | 0                                                                                   | 0                                                                                   | 1526                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 3                                                                                 |                                                                                   |                                                                                   | 48                                                                                |                                                                                   |                                                                                   | 4                                                                                   |                                                                                     |                                                                                     | 21                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 407                                                                               |                                                                                   |                                                                                   | 996                                                                               |                                                                                   |                                                                                   | 466                                                                                 |                                                                                     |                                                                                     | 300                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                   | 22.6                                                                              |                                                                                   |                                                                                   | 12.7                                                                                |                                                                                     |                                                                                     | 8.2                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.99                                                                              | 0.99                                                                              | 0.99                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.90                                                                              | 0.90                                                                                | 0.90                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Adj. Flow (vph)         | 82                                                                                | 928                                                                               | 14                                                                                | 8                                                                                 | 765                                                                               | 160                                                                               | 19                                                                                | 116                                                                                 | 8                                                                                   | 131                                                                                 | 53                                                                                  | 53                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 1024                                                                              | 0                                                                                 | 0                                                                                 | 933                                                                               | 0                                                                                 | 0                                                                                 | 143                                                                                 | 0                                                                                   | 0                                                                                   | 237                                                                                 | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 6                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 4                                                                                   |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 15.0                                                                              | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 9.0                                                                               | 9.0                                                                                 |                                                                                     | 9.0                                                                                 | 9.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 20.6                                                                              | 20.6                                                                              |                                                                                   | 20.6                                                                              | 20.6                                                                              |                                                                                   | 14.4                                                                              | 14.4                                                                                |                                                                                     | 14.4                                                                                | 14.4                                                                                |                                                                                     |
| Total Split (s)         | 44.0                                                                              | 44.0                                                                              |                                                                                   | 44.0                                                                              | 44.0                                                                              |                                                                                   | 31.0                                                                              | 31.0                                                                                |                                                                                     | 31.0                                                                                | 31.0                                                                                |                                                                                     |
| Total Split (%)         | 58.7%                                                                             | 58.7%                                                                             |                                                                                   | 58.7%                                                                             | 58.7%                                                                             |                                                                                   | 41.3%                                                                             | 41.3%                                                                               |                                                                                     | 41.3%                                                                               | 41.3%                                                                               |                                                                                     |
| Yellow Time (s)         | 4.1                                                                               | 4.1                                                                               |                                                                                   | 4.1                                                                               | 4.1                                                                               |                                                                                   | 3.1                                                                               | 3.1                                                                                 |                                                                                     | 3.1                                                                                 | 3.1                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.5                                                                               | 1.5                                                                               |                                                                                   | 1.5                                                                               | 1.5                                                                               |                                                                                   | 2.3                                                                               | 2.3                                                                                 |                                                                                     | 2.3                                                                                 | 2.3                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   | 5.4                                                                                 |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | C-Max                                                                             | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                              | None                                                                                |                                                                                     | None                                                                                | None                                                                                |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 48.9                                                                              |                                                                                   |                                                                                   | 48.9                                                                              |                                                                                   |                                                                                   | 15.1                                                                                |                                                                                     |                                                                                     | 15.1                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.65                                                                              |                                                                                   |                                                                                   | 0.65                                                                              |                                                                                   |                                                                                   | 0.20                                                                                |                                                                                     |                                                                                     | 0.20                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.58                                                                              |                                                                                   |                                                                                   | 0.45                                                                              |                                                                                   |                                                                                   | 0.36                                                                                |                                                                                     |                                                                                     | 0.73                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 5.2                                                                               |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |                                                                                   | 26.2                                                                                |                                                                                     |                                                                                     | 38.5                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 5.2                                                                               |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |                                                                                   | 26.2                                                                                |                                                                                     |                                                                                     | 38.5                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 5.2                                                                               |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |                                                                                   | 26.2                                                                                |                                                                                     |                                                                                     | 38.5                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 41                                                                                |                                                                                   |                                                                                   | 90                                                                                |                                                                                   |                                                                                   | 56                                                                                  |                                                                                     |                                                                                     | 95                                                                                  |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 64                                                                                |                                                                                   |                                                                                   | 167                                                                               |                                                                                   |                                                                                   | 93                                                                                  |                                                                                     |                                                                                     | 152                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 327                                                                               |                                                                                   |                                                                                   | 916                                                                               |                                                                                   |                                                                                   | 386                                                                                 |                                                                                     |                                                                                     | 220                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

108: Burroughs Road & Route 58 (Black Rock Turnpike)  
Lanes, Volumes, Timings

2017 Existing Conditions

Timing Plan: Weekday PM Peak

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Base Capacity (vph)    |                                                                                   | 1754                                                                              |                                                                                   |                                                                                   | 2073                                                                              |                                                                                   |                                                                                   | 676                                                                                 |                                                                                     |                                                                                     | 534                                                                                 |                                                                                     |
| Starvation Cap Reductn |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   | 0.58                                                                              |                                                                                   |                                                                                   | 0.45                                                                              |                                                                                   |                                                                                   | 0.21                                                                                |                                                                                     |                                                                                     | 0.44                                                                                |                                                                                     |

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 20 (27%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 10.8

Intersection LOS: B

Intersection Capacity Utilization 85.4%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)

|                                                                                          |                                                                                   |
|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|  Ø2 (R) |  |
| 44 s                                                                                     | 31 s                                                                              |
|  Ø6 (R) |  |
| 44 s                                                                                     | 31 s                                                                              |



# 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) 201 Rte 50 (Black Rock Turnpike)

## Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         | →     | ↖     | ↗    | ↘     | ↙     | ↘     | ↗    | ↖     | ↗     | ↖    | ↗    | ↖     |
|-------------------------|-------|-------|------|-------|-------|-------|------|-------|-------|------|------|-------|
| Lane Group              | EBT   | EBR   | EBR2 | WBL2  | WBL   | WBT   | WBR  | NWL2  | NWL   | NWR  | NWR2 | NEL   |
| Lane Configurations     | ↖     | ↗     |      |       |       | ↖↗    |      |       | ↖↗    |      |      |       |
| Traffic Volume (vph)    | 515   | 524   | 3    | 21    | 8     | 362   | 2    | 2     | 452   | 5    | 38   | 7     |
| Future Volume (vph)     | 515   | 524   | 3    | 21    | 8     | 362   | 2    | 2     | 452   | 5    | 38   | 7     |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900 | 1900  |
| Lane Width (ft)         | 12    | 12    | 12   | 12    | 11    | 11    | 12   | 12    | 10    | 12   | 12   | 12    |
| Lane Util. Factor       | 1.00  | 1.00  | 1.00 | 0.95  | 0.95  | 0.95  | 0.95 | 0.95  | 0.97  | 0.95 | 0.95 | 1.00  |
| Frt                     |       | 0.850 |      |       |       | 0.999 |      |       | 0.987 |      |      |       |
| Flt Protected           |       |       |      |       |       | 0.996 |      |       | 0.956 |      |      |       |
| Satd. Flow (prot)       | 1863  | 1583  | 0    | 0     | 0     | 3404  | 0    | 0     | 3182  | 0    | 0    | 0     |
| Flt Permitted           |       |       |      |       |       | 0.823 |      |       | 0.952 |      |      |       |
| Satd. Flow (perm)       | 1863  | 1583  | 0    | 0     | 0     | 2813  | 0    | 0     | 3169  | 0    | 0    | 0     |
| Right Turn on Red       |       |       | Yes  |       |       |       | Yes  |       |       |      | Yes  |       |
| Satd. Flow (RTOR)       |       | 57    |      |       |       |       |      |       | 152   |      |      |       |
| Link Speed (mph)        | 30    |       |      |       |       | 30    |      |       | 30    |      |      |       |
| Link Distance (ft)      | 996   |       |      |       |       | 549   |      |       | 218   |      |      |       |
| Travel Time (s)         | 22.6  |       |      |       |       | 12.5  |      |       | 5.0   |      |      |       |
| Peak Hour Factor        | 0.97  | 0.97  | 0.97 | 0.86  | 0.86  | 0.86  | 0.86 | 0.91  | 0.91  | 0.91 | 0.91 | 0.80  |
| Adj. Flow (vph)         | 531   | 540   | 3    | 24    | 9     | 421   | 2    | 2     | 497   | 5    | 42   | 9     |
| Shared Lane Traffic (%) |       |       |      |       |       |       |      |       |       |      |      |       |
| Lane Group Flow (vph)   | 531   | 543   | 0    | 0     | 0     | 456   | 0    | 0     | 546   | 0    | 0    | 0     |
| Turn Type               | NA    | pm+ov |      | Perm  | Perm  | NA    |      | D.Pm  | Prot  |      |      | Perm  |
| Protected Phases        | 2     | 4     |      |       |       | 2     |      |       | 4     |      |      |       |
| Permitted Phases        |       | 2     |      | 2     | 2     |       |      | 4     |       |      |      | 5     |
| Detector Phase          | 2     | 4     |      | 2     | 2     | 2     |      | 4     | 4     |      |      | 5     |
| Switch Phase            |       |       |      |       |       |       |      |       |       |      |      |       |
| Minimum Initial (s)     | 15.0  | 9.0   |      | 15.0  | 15.0  | 15.0  |      | 9.0   | 9.0   |      |      | 5.0   |
| Minimum Split (s)       | 22.8  | 15.4  |      | 22.8  | 22.8  | 22.8  |      | 15.4  | 15.4  |      |      | 12.6  |
| Total Split (s)         | 35.8  | 33.4  |      | 35.8  | 35.8  | 35.8  |      | 33.4  | 33.4  |      |      | 19.6  |
| Total Split (%)         | 40.3% | 37.6% |      | 40.3% | 40.3% | 40.3% |      | 37.6% | 37.6% |      |      | 22.1% |
| Yellow Time (s)         | 4.1   | 3.3   |      | 4.1   | 4.1   | 4.1   |      | 3.3   | 3.3   |      |      | 3.3   |
| All-Red Time (s)        | 3.7   | 3.1   |      | 3.7   | 3.7   | 3.7   |      | 3.1   | 3.1   |      |      | 4.3   |
| Lost Time Adjust (s)    | 0.0   | 0.0   |      |       |       | 0.0   |      |       | 0.0   |      |      |       |
| Total Lost Time (s)     | 7.8   | 6.4   |      |       |       | 7.8   |      |       | 6.4   |      |      |       |
| Lead/Lag                |       |       |      |       |       |       |      |       |       |      |      |       |
| Lead-Lag Optimize?      |       |       |      |       |       |       |      |       |       |      |      |       |
| Recall Mode             | Min   | None  |      | Min   | Min   | Min   |      | None  | None  |      |      | None  |
| Act Effct Green (s)     | 21.0  | 46.8  |      |       |       | 21.0  |      |       | 12.2  |      |      |       |
| Actuated g/C Ratio      | 0.40  | 0.89  |      |       |       | 0.40  |      |       | 0.23  |      |      |       |
| v/c Ratio               | 0.72  | 0.38  |      |       |       | 0.41  |      |       | 0.64  |      |      |       |
| Control Delay           | 21.9  | 3.1   |      |       |       | 14.1  |      |       | 18.4  |      |      |       |
| Queue Delay             | 0.0   | 0.0   |      |       |       | 0.0   |      |       | 0.0   |      |      |       |
| Total Delay             | 21.9  | 3.1   |      |       |       | 14.1  |      |       | 18.4  |      |      |       |
| LOS                     | C     | A     |      |       |       | B     |      |       | B     |      |      |       |
| Approach Delay          | 12.4  |       |      |       |       | 14.1  |      |       | 18.4  |      |      |       |
| Approach LOS            | B     |       |      |       |       | B     |      |       | B     |      |      |       |
| Queue Length 50th (ft)  | 95    | 0     |      |       |       | 36    |      |       | 43    |      |      |       |
| Queue Length 95th (ft)  | #341  | 120   |      |       |       | 114   |      |       | 130   |      |      |       |
| Internal Link Dist (ft) | 916   |       |      |       |       | 469   |      |       | 138   |      |      |       |
| Turn Bay Length (ft)    |       |       |      |       |       |       |      |       |       |      |      |       |

# 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) 201 R Existing Black Rock Turnpike Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | NET                                                                               | NER                                                                               | NER2                                                                              | SWL                                                                               | SWT                                                                               | SWR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |                                                                                   |  |                                                                                   |
| Traffic Volume (vph)    | 0                                                                                 | 1                                                                                 | 3                                                                                 | 2                                                                                 | 0                                                                                 | 3                                                                                 |
| Future Volume (vph)     | 0                                                                                 | 1                                                                                 | 3                                                                                 | 2                                                                                 | 0                                                                                 | 3                                                                                 |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 12                                                                                | 12                                                                                | 12                                                                                | 15                                                                                | 12                                                                                | 12                                                                                |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.952                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.923                                                                             |                                                                                   |
| Flt Protected           | 0.969                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.979                                                                             |                                                                                   |
| Satd. Flow (prot)       | 1718                                                                              | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1683                                                                              | 0                                                                                 |
| Flt Permitted           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1773                                                                              | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1719                                                                              | 0                                                                                 |
| Right Turn on Red       |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |
| Satd. Flow (RTOR)       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |
| Link Distance (ft)      | 653                                                                               |                                                                                   |                                                                                   |                                                                                   | 695                                                                               |                                                                                   |
| Travel Time (s)         | 17.8                                                                              |                                                                                   |                                                                                   |                                                                                   | 19.0                                                                              |                                                                                   |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              |
| Adj. Flow (vph)         | 0                                                                                 | 1                                                                                 | 4                                                                                 | 3                                                                                 | 0                                                                                 | 4                                                                                 |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 14                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 |
| Turn Type               | NA                                                                                |                                                                                   |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   |
| Protected Phases        | 5                                                                                 |                                                                                   |                                                                                   |                                                                                   | 5                                                                                 |                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   |
| Detector Phase          | 5                                                                                 |                                                                                   |                                                                                   | 5                                                                                 | 5                                                                                 |                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)     | 5.0                                                                               |                                                                                   |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   |
| Minimum Split (s)       | 12.6                                                                              |                                                                                   |                                                                                   | 12.6                                                                              | 12.6                                                                              |                                                                                   |
| Total Split (s)         | 19.6                                                                              |                                                                                   |                                                                                   | 19.6                                                                              | 19.6                                                                              |                                                                                   |
| Total Split (%)         | 22.1%                                                                             |                                                                                   |                                                                                   | 22.1%                                                                             | 22.1%                                                                             |                                                                                   |
| Yellow Time (s)         | 3.3                                                                               |                                                                                   |                                                                                   | 3.3                                                                               | 3.3                                                                               |                                                                                   |
| All-Red Time (s)        | 4.3                                                                               |                                                                                   |                                                                                   | 4.3                                                                               | 4.3                                                                               |                                                                                   |
| Lost Time Adjust (s)    | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |
| Total Lost Time (s)     | 7.6                                                                               |                                                                                   |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Recall Mode             | None                                                                              |                                                                                   |                                                                                   | None                                                                              | None                                                                              |                                                                                   |
| Act Effct Green (s)     | 5.7                                                                               |                                                                                   |                                                                                   |                                                                                   | 5.7                                                                               |                                                                                   |
| Actuated g/C Ratio      | 0.11                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.11                                                                              |                                                                                   |
| v/c Ratio               | 0.07                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.04                                                                              |                                                                                   |
| Control Delay           | 29.8                                                                              |                                                                                   |                                                                                   |                                                                                   | 29.7                                                                              |                                                                                   |
| Queue Delay             | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |
| Total Delay             | 29.8                                                                              |                                                                                   |                                                                                   |                                                                                   | 29.7                                                                              |                                                                                   |
| LOS                     | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |
| Approach Delay          | 29.8                                                                              |                                                                                   |                                                                                   |                                                                                   | 29.7                                                                              |                                                                                   |
| Approach LOS            | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |
| Queue Length 50th (ft)  | 3                                                                                 |                                                                                   |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |
| Queue Length 95th (ft)  | 20                                                                                |                                                                                   |                                                                                   |                                                                                   | 13                                                                                |                                                                                   |
| Internal Link Dist (ft) | 573                                                                               |                                                                                   |                                                                                   |                                                                                   | 615                                                                               |                                                                                   |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

# 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)

Timing Plan: Weekday PM Peak

|                        | →    | ↗    | ↘    | ↖    | ←   | ↗    | ↘   | ↖    | ←    | ↗   | ↘    | ↖   |
|------------------------|------|------|------|------|-----|------|-----|------|------|-----|------|-----|
| Lane Group             | EBT  | EBR  | EBR2 | WBL2 | WBL | WBT  | WBR | NWL2 | NWL  | NWR | NWR2 | NEL |
| Base Capacity (vph)    | 1080 | 1534 |      |      |     | 1630 |     |      | 1838 |     |      |     |
| Starvation Cap Reductn | 0    | 0    |      |      |     | 0    |     |      | 0    |     |      |     |
| Spillback Cap Reductn  | 0    | 0    |      |      |     | 0    |     |      | 0    |     |      |     |
| Storage Cap Reductn    | 0    | 0    |      |      |     | 0    |     |      | 0    |     |      |     |
| Reduced v/c Ratio      | 0.49 | 0.35 |      |      |     | 0.28 |     |      | 0.30 |     |      |     |

## Intersection Summary

Area Type: Other

Cycle Length: 88.8

Actuated Cycle Length: 52.6

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 14.5

Intersection LOS: B

Intersection Capacity Utilization 68.9%

ICU Level of Service C

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)/Route 58 (Tunxis Hill Cut

|                                                                                      |                                                                                      |                                                                                        |
|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
|  02 |  04 |  05 |
| 35.8 s                                                                               | 33.4 s                                                                               | 19.6 s                                                                                 |

|                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                        |  |  |  |  |  |  |
| Lane Group             | NET                                                                               | NER                                                                               | NER2                                                                              | SWL                                                                               | SWT                                                                               | SWR                                                                               |
| Base Capacity (vph)    | 440                                                                               |                                                                                   |                                                                                   |                                                                                   | 427                                                                               |                                                                                   |
| Starvation Cap Reductn | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |
| Storage Cap Reductn    | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |
| Reduced v/c Ratio      | 0.03                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.02                                                                              |                                                                                   |
| Intersection Summary   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |



201: Tunxis Hill Road & Route 58 (Tunxis Hill Cutoff)  
Lanes, Volumes, Timings

2017 Existing Conditions

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |  |
| Traffic Volume (vph)    | 595                                                                               | 6                                                                                 | 46                                                                                | 391                                                                               | 0                                                                                 | 79                                                                                |
| Future Volume (vph)     | 595                                                                               | 6                                                                                 | 46                                                                                | 391                                                                               | 0                                                                                 | 79                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 10                                                                                | 10                                                                                |
| Storage Length (ft)     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 50                                                                                |
| Storage Lanes           |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |
| Taper Length (ft)       |                                                                                   |                                                                                   | 25                                                                                |                                                                                   | 25                                                                                |                                                                                   |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.999                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |
| Flt Protected           |                                                                                   |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 3418                                                                              | 0                                                                                 | 0                                                                                 | 1792                                                                              | 1739                                                                              | 1478                                                                              |
| Flt Permitted           |                                                                                   |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 3418                                                                              | 0                                                                                 | 0                                                                                 | 1792                                                                              | 1739                                                                              | 1478                                                                              |
| Link Speed (mph)        | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                | 25                                                                                |                                                                                   |
| Link Distance (ft)      | 1095                                                                              |                                                                                   |                                                                                   | 214                                                                               | 782                                                                               |                                                                                   |
| Travel Time (s)         | 24.9                                                                              |                                                                                   |                                                                                   | 4.9                                                                               | 21.3                                                                              |                                                                                   |
| Peak Hour Factor        | 0.95                                                                              | 0.95                                                                              | 0.90                                                                              | 0.90                                                                              | 0.83                                                                              | 0.83                                                                              |
| Adj. Flow (vph)         | 626                                                                               | 6                                                                                 | 51                                                                                | 434                                                                               | 0                                                                                 | 95                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 632                                                                               | 0                                                                                 | 0                                                                                 | 485                                                                               | 0                                                                                 | 95                                                                                |
| Sign Control            | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 46.4% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1.2

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↑↑   |      |      | ↑    | ↑    | ↑    |
| Traffic Vol, veh/h       | 595  | 6    | 46   | 391  | 0    | 79   |
| Future Vol, veh/h        | 595  | 6    | 46   | 391  | 0    | 79   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | 0    | 50   |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 95   | 95   | 90   | 90   | 83   | 83   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 626  | 6    | 51   | 434  | 0    | 95   |

| Major/Minor          | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0      | 0      | 633    |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Critical Hdwy        | -      | -      | 4.13   |
| Critical Hdwy Stg 1  | -      | -      | -      |
| Critical Hdwy Stg 2  | -      | -      | -      |
| Follow-up Hdwy       | -      | -      | 2.219  |
| Pot Cap-1 Maneuver   | -      | -      | 948    |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | -      | -      | 948    |
| Mov Cap-2 Maneuver   | -      | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |

| Approach             | EB | WB  | NB   |
|----------------------|----|-----|------|
| HCM Control Delay, s | 0  | 0.9 | 11.1 |
| HCM LOS              |    |     | B    |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | -     | 681   | -   | -   | 948   | -   |
| HCM Lane V/C Ratio    | -     | 0.14  | -   | -   | 0.054 | -   |
| HCM Control Delay (s) | 0     | 11.1  | -   | -   | 9     | 0   |
| HCM Lane LOS          | A     | B     | -   | -   | A     | A   |
| HCM 95th %tile Q(veh) | -     | 0.5   | -   | -   | 0.2   | -   |

202: Route 732 (Black Rock Turnpike) & Judd Street  
Lanes, Volumes, Timings

2017 Existing Conditions  
Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (vph)    | 32                                                                                | 91                                                                                | 50                                                                                | 465                                                                               | 531                                                                               | 19                                                                                |
| Future Volume (vph)     | 32                                                                                | 91                                                                                | 50                                                                                | 465                                                                               | 531                                                                               | 19                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Storage Length (ft)     | 0                                                                                 | 0                                                                                 | 25                                                                                |                                                                                   |                                                                                   | 0                                                                                 |
| Storage Lanes           | 1                                                                                 | 0                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 25                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.900                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |
| Flt Protected           | 0.987                                                                             |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1875                                                                              | 0                                                                                 | 0                                                                                 | 3522                                                                              | 1853                                                                              | 0                                                                                 |
| Flt Permitted           | 0.987                                                                             |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1875                                                                              | 0                                                                                 | 0                                                                                 | 3522                                                                              | 1853                                                                              | 0                                                                                 |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 586                                                                               |                                                                                   |                                                                                   | 395                                                                               | 218                                                                               |                                                                                   |
| Travel Time (s)         | 16.0                                                                              |                                                                                   |                                                                                   | 9.0                                                                               | 5.0                                                                               |                                                                                   |
| Peak Hour Factor        | 0.83                                                                              | 0.83                                                                              | 0.91                                                                              | 0.91                                                                              | 0.95                                                                              | 0.95                                                                              |
| Adj. Flow (vph)         | 39                                                                                | 110                                                                               | 55                                                                                | 511                                                                               | 559                                                                               | 20                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 149                                                                               | 0                                                                                 | 0                                                                                 | 566                                                                               | 579                                                                               | 0                                                                                 |
| Sign Control            | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 60.8% ICU Level of Service B

Analysis Period (min) 15

Intersection

Int Delay, s/veh 2.6

| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↔    |      |      | ↔    | ↔    |      |
| Traffic Vol, veh/h       | 32   | 91   | 50   | 465  | 531  | 19   |
| Future Vol, veh/h        | 32   | 91   | 50   | 465  | 531  | 19   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 0    | -    | 25   | -    | -    | -    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 83   | 83   | 91   | 91   | 95   | 95   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 39   | 110  | 55   | 511  | 559  | 20   |

| Major/Minor          | Minor2 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 934    | 569    | 579    |
| Stage 1              | 569    | -      | -      |
| Stage 2              | 365    | -      | -      |
| Critical Hdwy        | 6.63   | 6.23   | 4.13   |
| Critical Hdwy Stg 1  | 5.43   | -      | -      |
| Critical Hdwy Stg 2  | 5.83   | -      | -      |
| Follow-up Hdwy       | 3.519  | 3.319  | 2.219  |
| Pot Cap-1 Maneuver   | 279    | 521    | 993    |
| Stage 1              | 565    | -      | -      |
| Stage 2              | 674    | -      | -      |
| Platoon blocked, %   |        |        |        |
| Mov Cap-1 Maneuver   | 258    | 521    | 993    |
| Mov Cap-2 Maneuver   | 258    | -      | -      |
| Stage 1              | 565    | -      | -      |
| Stage 2              | 622    | -      | -      |

| Approach             | EB   | NB  | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 18.6 | 1.1 | 0  |
| HCM LOS              | C    |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 993   | -   | 412   | -   | -   |
| HCM Lane V/C Ratio    | 0.055 | -   | 0.36  | -   | -   |
| HCM Control Delay (s) | 8.8   | 0.3 | 18.6  | -   | -   |
| HCM Lane LOS          | A     | A   | C     | -   | -   |
| HCM 95th %tile Q(veh) | 0.2   | -   | 1.6   | -   | -   |



# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahoe Drive Existing Conditions Lanes, Volumes, Timings

Timing Plan: Saturday Midday

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 6                                                                                 | 1                                                                                 | 2                                                                                 | 71                                                                                | 1                                                                                 | 105                                                                               | 2                                                                                  | 774                                                                                 | 73                                                                                  | 67                                                                                  | 845                                                                                 | 8                                                                                   |
| Future Volume (vph)     | 6                                                                                 | 1                                                                                 | 2                                                                                 | 71                                                                                | 1                                                                                 | 105                                                                               | 2                                                                                  | 774                                                                                 | 73                                                                                  | 67                                                                                  | 845                                                                                 | 8                                                                                   |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                 | 13                                                                                  | 12                                                                                  | 12                                                                                  | 13                                                                                  | 12                                                                                  |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.966                                                                             |                                                                                   |                                                                                   | 0.920                                                                             |                                                                                   |                                                                                    | 0.988                                                                               |                                                                                     |                                                                                     | 0.999                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.968                                                                             |                                                                                   |                                                                                   | 0.980                                                                             |                                                                                   |                                                                                    | 0.999                                                                               |                                                                                     |                                                                                     | 0.996                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 1974                                                                              | 0                                                                                 | 0                                                                                 | 1903                                                                              | 0                                                                                 | 0                                                                                  | 1902                                                                                | 0                                                                                   | 0                                                                                   | 1915                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.807                                                                             |                                                                                   |                                                                                   | 0.863                                                                             |                                                                                   |                                                                                    | 0.999                                                                               |                                                                                     |                                                                                     | 0.888                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 1646                                                                              | 0                                                                                 | 0                                                                                 | 1676                                                                              | 0                                                                                 | 0                                                                                  | 1900                                                                                | 0                                                                                   | 0                                                                                   | 1708                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 3                                                                                 |                                                                                   |                                                                                   | 98                                                                                |                                                                                   |                                                                                    | 15                                                                                  |                                                                                     |                                                                                     | 1                                                                                   |                                                                                     |
| Link Speed (mph)        |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 35                                                                                  |                                                                                     |                                                                                     | 35                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 378                                                                               |                                                                                   |                                                                                   | 442                                                                               |                                                                                   |                                                                                    | 1898                                                                                |                                                                                     |                                                                                     | 522                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 10.3                                                                              |                                                                                   |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                    | 37.0                                                                                |                                                                                     |                                                                                     | 10.2                                                                                |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.94                                                                               | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                |
| Adj. Flow (vph)         | 8                                                                                 | 1                                                                                 | 3                                                                                 | 89                                                                                | 1                                                                                 | 131                                                                               | 2                                                                                  | 823                                                                                 | 78                                                                                  | 71                                                                                  | 899                                                                                 | 9                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 12                                                                                | 0                                                                                 | 0                                                                                 | 221                                                                               | 0                                                                                 | 0                                                                                  | 903                                                                                 | 0                                                                                   | 0                                                                                   | 979                                                                                 | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                    | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Permitted Phases        | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   | 2                                                                                  |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 4                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |                                                                                   | 2                                                                                  | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 15.0                                                                               | 15.0                                                                                |                                                                                     | 15.0                                                                                | 15.0                                                                                |                                                                                     |
| Minimum Split (s)       | 11.7                                                                              | 11.7                                                                              |                                                                                   | 11.7                                                                              | 11.7                                                                              |                                                                                   | 20.6                                                                               | 20.6                                                                                |                                                                                     | 20.6                                                                                | 20.6                                                                                |                                                                                     |
| Total Split (s)         | 17.7                                                                              | 17.7                                                                              |                                                                                   | 17.7                                                                              | 17.7                                                                              |                                                                                   | 48.6                                                                               | 48.6                                                                                |                                                                                     | 48.6                                                                                | 48.6                                                                                |                                                                                     |
| Total Split (%)         | 26.7%                                                                             | 26.7%                                                                             |                                                                                   | 26.7%                                                                             | 26.7%                                                                             |                                                                                   | 73.3%                                                                              | 73.3%                                                                               |                                                                                     | 73.3%                                                                               | 73.3%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.3                                                                               | 3.3                                                                               |                                                                                   | 3.3                                                                               | 3.3                                                                               |                                                                                   | 4.0                                                                                | 4.0                                                                                 |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.4                                                                               | 1.4                                                                               |                                                                                   | 1.4                                                                               | 1.4                                                                               |                                                                                   | 1.6                                                                                | 1.6                                                                                 |                                                                                     | 1.6                                                                                 | 1.6                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                    | 5.6                                                                                 |                                                                                     |                                                                                     | 5.6                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              |                                                                                   | Min                                                                                | Min                                                                                 |                                                                                     | Min                                                                                 | Min                                                                                 |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 9.5                                                                               |                                                                                   |                                                                                   | 9.5                                                                               |                                                                                   |                                                                                    | 38.2                                                                                |                                                                                     |                                                                                     | 38.2                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.16                                                                              |                                                                                   |                                                                                   | 0.16                                                                              |                                                                                   |                                                                                    | 0.66                                                                                |                                                                                     |                                                                                     | 0.66                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.04                                                                              |                                                                                   |                                                                                   | 0.62                                                                              |                                                                                   |                                                                                    | 0.72                                                                                |                                                                                     |                                                                                     | 0.87                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 20.0                                                                              |                                                                                   |                                                                                   | 22.1                                                                              |                                                                                   |                                                                                    | 10.9                                                                                |                                                                                     |                                                                                     | 19.9                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 20.0                                                                              |                                                                                   |                                                                                   | 22.1                                                                              |                                                                                   |                                                                                    | 10.9                                                                                |                                                                                     |                                                                                     | 19.9                                                                                |                                                                                     |
| LOS                     |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 20.0                                                                              |                                                                                   |                                                                                   | 22.1                                                                              |                                                                                   |                                                                                    | 10.9                                                                                |                                                                                     |                                                                                     | 19.9                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 3                                                                                 |                                                                                   |                                                                                   | 43                                                                                |                                                                                   |                                                                                    | 160                                                                                 |                                                                                     |                                                                                     | 218                                                                                 |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 14                                                                                |                                                                                   |                                                                                   | 86                                                                                |                                                                                   |                                                                                    | 337                                                                                 |                                                                                     |                                                                                     | #581                                                                                |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 298                                                                               |                                                                                   |                                                                                   | 362                                                                               |                                                                                   |                                                                                    | 1818                                                                                |                                                                                     |                                                                                     | 442                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive Existing Conditions Lanes, Volumes, Timings

Timing Plan: Saturday Midday

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Base Capacity (vph)    |                                                                                   | 377                                                                               |                                                                                   |                                                                                   | 457                                                                               |                                                                                   |                                                                                    | 1435                                                                                |                                                                                     |                                                                                     | 1287                                                                                |                                                                                     |
| Starvation Cap Reductn |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   | 0.03                                                                              |                                                                                   |                                                                                   | 0.48                                                                              |                                                                                   |                                                                                    | 0.63                                                                                |                                                                                     |                                                                                     | 0.76                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 66.3

Actuated Cycle Length: 58.2

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 16.3

Intersection LOS: B

Intersection Capacity Utilization 116.2%

ICU Level of Service H

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

|                                                                                       |                                                                                         |
|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|  Ø2  |  Ø4  |
| 48.6 s                                                                                | 17.7 s                                                                                  |
|  Ø6 |  Ø8 |
| 48.6 s                                                                                | 17.7 s                                                                                  |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

## Lanes, Volumes, Timings

2017 Existing Conditions

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |    |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3 |
| Lane Configurations     |  |  |  |  |  |  |    |
| Traffic Volume (vph)    | 113                                                                               | 195                                                                               | 136                                                                               | 758                                                                               | 765                                                                               | 73                                                                                |    |
| Future Volume (vph)     | 113                                                                               | 195                                                                               | 136                                                                               | 758                                                                               | 765                                                                               | 73                                                                                |    |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |    |
| Lane Width (ft)         | 10                                                                                | 10                                                                                | 11                                                                                | 11                                                                                | 12                                                                                | 12                                                                                |    |
| Storage Length (ft)     | 0                                                                                 | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   | 0                                                                                 |    |
| Storage Lanes           | 1                                                                                 | 1                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |    |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |    |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              |    |
| Frt                     |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.987                                                                             |                                                                                   |    |
| Flt Protected           | 0.950                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |    |
| Satd. Flow (prot)       | 1652                                                                              | 1478                                                                              | 1711                                                                              | 1801                                                                              | 3493                                                                              | 0                                                                                 |    |
| Flt Permitted           | 0.950                                                                             |                                                                                   | 0.242                                                                             |                                                                                   |                                                                                   |                                                                                   |    |
| Satd. Flow (perm)       | 1652                                                                              | 1478                                                                              | 436                                                                               | 1801                                                                              | 3493                                                                              | 0                                                                                 |    |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |    |
| Satd. Flow (RTOR)       |                                                                                   | 238                                                                               |                                                                                   |                                                                                   | 12                                                                                |                                                                                   |    |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 35                                                                                |                                                                                   |    |
| Link Distance (ft)      | 445                                                                               |                                                                                   |                                                                                   | 510                                                                               | 341                                                                               |                                                                                   |    |
| Travel Time (s)         | 12.1                                                                              |                                                                                   |                                                                                   | 11.6                                                                              | 6.6                                                                               |                                                                                   |    |
| Peak Hour Factor        | 0.82                                                                              | 0.82                                                                              | 0.98                                                                              | 0.98                                                                              | 0.90                                                                              | 0.90                                                                              |    |
| Adj. Flow (vph)         | 138                                                                               | 238                                                                               | 139                                                                               | 773                                                                               | 850                                                                               | 81                                                                                |    |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |    |
| Lane Group Flow (vph)   | 138                                                                               | 238                                                                               | 139                                                                               | 773                                                                               | 931                                                                               | 0                                                                                 |    |
| Turn Type               | Prot                                                                              | Perm                                                                              | pm+pt                                                                             | NA                                                                                | NA                                                                                |                                                                                   |    |
| Protected Phases        | 4                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 | 2                                                                                 | 3                                                                                 |    |
| Permitted Phases        |                                                                                   | 4                                                                                 | 6                                                                                 |                                                                                   |                                                                                   |                                                                                   |    |
| Detector Phase          | 4                                                                                 | 4                                                                                 | 1                                                                                 | 6                                                                                 | 2                                                                                 |                                                                                   |    |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |    |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               | 5.0                                                                               | 15.0                                                                              | 15.0                                                                              | 7.0                                                                               |    |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              | 9.2                                                                               | 21.9                                                                              | 21.9                                                                              | 22.0                                                                              |    |
| Total Split (s)         | 21.9                                                                              | 21.9                                                                              | 9.2                                                                               | 31.1                                                                              | 21.9                                                                              | 22.0                                                                              |    |
| Total Split (%)         | 29.2%                                                                             | 29.2%                                                                             | 12.3%                                                                             | 41.5%                                                                             | 29.2%                                                                             | 29%                                                                               |    |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               | 3.2                                                                               | 4.9                                                                               | 4.9                                                                               | 4.0                                                                               |    |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 2.0                                                                               | 2.0                                                                               | 0.0                                                                               |    |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |    |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               | 4.2                                                                               | 6.9                                                                               | 6.9                                                                               |                                                                                   |    |
| Lead/Lag                | Lag                                                                               | Lag                                                                               | Lead                                                                              |                                                                                   | Lag                                                                               | Lead                                                                              |    |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |    |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                             | C-Max                                                                             | None                                                                              |    |
| Act Effect Green (s)    | 11.3                                                                              | 11.3                                                                              | 55.5                                                                              | 52.8                                                                              | 41.8                                                                              |                                                                                   |    |
| Actuated g/C Ratio      | 0.15                                                                              | 0.15                                                                              | 0.74                                                                              | 0.70                                                                              | 0.56                                                                              |                                                                                   |    |
| v/c Ratio               | 0.55                                                                              | 0.56                                                                              | 0.32                                                                              | 0.61                                                                              | 0.48                                                                              |                                                                                   |    |
| Control Delay           | 37.7                                                                              | 9.6                                                                               | 7.8                                                                               | 16.7                                                                              | 11.6                                                                              |                                                                                   |    |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |    |
| Total Delay             | 37.7                                                                              | 9.6                                                                               | 7.8                                                                               | 16.7                                                                              | 11.6                                                                              |                                                                                   |    |
| LOS                     | D                                                                                 | A                                                                                 | A                                                                                 | B                                                                                 | B                                                                                 |                                                                                   |    |
| Approach Delay          | 19.9                                                                              |                                                                                   |                                                                                   | 15.3                                                                              | 11.6                                                                              |                                                                                   |    |
| Approach LOS            | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 | B                                                                                 |                                                                                   |    |
| Queue Length 50th (ft)  | 61                                                                                | 0                                                                                 | 24                                                                                | 299                                                                               | 120                                                                               |                                                                                   |    |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive Lanes, Volumes, Timings

2017 Existing Conditions  
Timing Plan: Saturday Midday

|                         |  |  |  |  |  |  |    |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3 |
| Queue Length 95th (ft)  | 96                                                                                | 40                                                                                | 59                                                                                | 464                                                                               | 207                                                                               |                                                                                   |    |
| Internal Link Dist (ft) | 365                                                                               |                                                                                   |                                                                                   | 430                                                                               | 261                                                                               |                                                                                   |    |
| Turn Bay Length (ft)    |                                                                                   | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   |                                                                                   |    |
| Base Capacity (vph)     | 394                                                                               | 533                                                                               | 437                                                                               | 1267                                                                              | 1953                                                                              |                                                                                   |    |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Reduced v/c Ratio       | 0.35                                                                              | 0.45                                                                              | 0.32                                                                              | 0.61                                                                              | 0.48                                                                              |                                                                                   |    |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 22 (29%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 14.5

Intersection LOS: B

Intersection Capacity Utilization 56.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

|                                                                                            |                                                                                           |                                                                                       |                                                                                         |
|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|  Ø1      |  Ø2 (R) |  Ø3 |  Ø4 |
| 9.2 s                                                                                      | 21.9 s                                                                                    | 22 s                                                                                  | 21.9 s                                                                                  |
|  Ø6 (R) |                                                                                           |                                                                                       |                                                                                         |
| 31.1 s                                                                                     |                                                                                           |                                                                                       |                                                                                         |



# 103: Route 58 (Black Rock Turnpike) & Brookside Drive

## Lanes, Volumes, Timings

2017 Existing Conditions

Timing Plan: Saturday MIDDAY

| Lane Group              | EBL   | EBR  | NBL   | NBT   | SBT   | SBR  |
|-------------------------|-------|------|-------|-------|-------|------|
| Lane Configurations     | W     |      |       | W     | W     |      |
| Traffic Volume (vph)    | 84    | 56   | 51    | 850   | 899   | 102  |
| Future Volume (vph)     | 84    | 56   | 51    | 850   | 899   | 102  |
| Ideal Flow (vphpl)      | 1900  | 1900 | 1900  | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 16    | 12   | 12    | 12    | 12    | 12   |
| Lane Util. Factor       | 1.00  | 1.00 | 0.95  | 0.95  | 0.95  | 0.95 |
| Frt                     | 0.946 |      |       |       | 0.985 |      |
| Flt Protected           | 0.971 |      |       | 0.997 |       |      |
| Satd. Flow (prot)       | 1939  | 0    | 0     | 3529  | 3486  | 0    |
| Flt Permitted           | 0.971 |      |       | 0.838 |       |      |
| Satd. Flow (perm)       | 1939  | 0    | 0     | 2966  | 3486  | 0    |
| Right Turn on Red       |       | Yes  |       |       |       | Yes  |
| Satd. Flow (RTOR)       | 44    |      |       |       | 19    |      |
| Link Speed (mph)        | 25    |      |       | 30    | 30    |      |
| Link Distance (ft)      | 347   |      |       | 293   | 336   |      |
| Travel Time (s)         | 9.5   |      |       | 6.7   | 7.6   |      |
| Peak Hour Factor        | 0.83  | 0.83 | 0.98  | 0.98  | 0.96  | 0.96 |
| Adj. Flow (vph)         | 101   | 67   | 52    | 867   | 936   | 106  |
| Shared Lane Traffic (%) |       |      |       |       |       |      |
| Lane Group Flow (vph)   | 168   | 0    | 0     | 919   | 1042  | 0    |
| Turn Type               | Prot  |      | pm+pt | NA    | NA    |      |
| Protected Phases        | 4     |      | 5     | 2     | 6     |      |
| Permitted Phases        |       |      | 2     |       |       |      |
| Detector Phase          | 4     |      | 5     | 2     | 6     |      |
| Switch Phase            |       |      |       |       |       |      |
| Minimum Initial (s)     | 9.0   |      | 3.0   | 15.0  | 15.0  |      |
| Minimum Split (s)       | 13.0  |      | 8.9   | 20.4  | 20.4  |      |
| Total Split (s)         | 25.0  |      | 14.0  | 50.0  | 36.0  |      |
| Total Split (%)         | 33.3% |      | 18.7% | 66.7% | 48.0% |      |
| Yellow Time (s)         | 3.0   |      | 4.2   | 4.2   | 4.2   |      |
| All-Red Time (s)        | 1.0   |      | 1.7   | 1.2   | 1.2   |      |
| Lost Time Adjust (s)    | 0.0   |      |       | 0.0   | 0.0   |      |
| Total Lost Time (s)     | 4.0   |      |       | 5.4   | 5.4   |      |
| Lead/Lag                |       |      | Lag   |       | Lead  |      |
| Lead-Lag Optimize?      |       |      | Yes   |       | Yes   |      |
| Recall Mode             | None  |      | None  | C-Max | C-Max |      |
| Act Effect Green (s)    | 10.4  |      |       | 55.2  | 55.2  |      |
| Actuated g/C Ratio      | 0.14  |      |       | 0.74  | 0.74  |      |
| v/c Ratio               | 0.55  |      |       | 0.42  | 0.41  |      |
| Control Delay           | 28.7  |      |       | 3.5   | 3.3   |      |
| Queue Delay             | 0.0   |      |       | 0.1   | 0.0   |      |
| Total Delay             | 28.7  |      |       | 3.6   | 3.3   |      |
| LOS                     | C     |      |       | A     | A     |      |
| Approach Delay          | 28.7  |      |       | 3.6   | 3.3   |      |
| Approach LOS            | C     |      |       | A     | A     |      |
| Queue Length 50th (ft)  | 55    |      |       | 29    | 11    |      |
| Queue Length 95th (ft)  | 95    |      |       | 79    | 12    |      |
| Internal Link Dist (ft) | 267   |      |       | 213   | 256   |      |
| Turn Bay Length (ft)    |       |      |       |       |       |      |

# 103: Route 58 (Black Rock Turnpike) & Brookside Drive Lanes, Volumes, Timings

2017 Existing Conditions  
Timing Plan: Saturday MIDDAY

|                        |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Base Capacity (vph)    | 574                                                                               |                                                                                   |                                                                                   | 2182                                                                              | 2569                                                                              |                                                                                   |
| Starvation Cap Reductn | 0                                                                                 |                                                                                   |                                                                                   | 392                                                                               | 0                                                                                 |                                                                                   |
| Spillback Cap Reductn  | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 102                                                                               |                                                                                   |
| Storage Cap Reductn    | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |
| Reduced v/c Ratio      | 0.29                                                                              |                                                                                   |                                                                                   | 0.51                                                                              | 0.42                                                                              |                                                                                   |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 45 (60%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 5.4

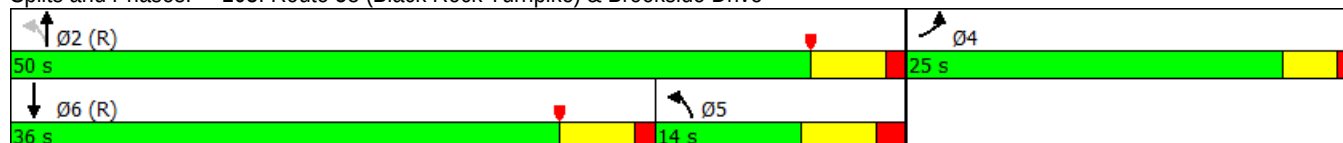
Intersection LOS: A

Intersection Capacity Utilization 73.5%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive



# 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield 2017 Existing Conditions Lanes, Volumes, Timings

Timing Plan: Saturday Midday

| Lane Group              | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|------|
| Lane Configurations     |       |       |       |       |       |       |       |       |      |       |       |      |
| Traffic Volume (vph)    | 34    | 18    | 40    | 83    | 21    | 124   | 34    | 788   | 71   | 102   | 832   | 41   |
| Future Volume (vph)     | 34    | 18    | 40    | 83    | 21    | 124   | 34    | 788   | 71   | 102   | 832   | 41   |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12    | 12    | 12    | 12    | 12    | 11    | 12    | 11    | 12   | 12    | 11    | 12   |
| Storage Length (ft)     | 0     |       | 0     | 0     |       | 75    | 0     |       | 0    | 0     |       | 0    |
| Storage Lanes           | 0     |       | 1     | 0     |       | 1     | 0     |       | 0    | 0     |       | 0    |
| Taper Length (ft)       | 25    |       |       | 25    |       |       | 25    |       |      | 25    |       |      |
| Lane Util. Factor       | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 0.95  | 0.95  | 0.95 | 0.95  | 0.95  | 0.95 |
| Frt                     |       |       | 0.850 |       |       | 0.850 |       | 0.988 |      |       | 0.994 |      |
| Flt Protected           |       | 0.968 |       |       | 0.962 |       |       | 0.998 |      |       | 0.995 |      |
| Satd. Flow (prot)       | 0     | 1803  | 1583  | 0     | 1792  | 1531  | 0     | 3373  | 0    | 0     | 3384  | 0    |
| Flt Permitted           |       | 0.765 |       |       | 0.729 |       |       | 0.886 |      |       | 0.744 |      |
| Satd. Flow (perm)       | 0     | 1425  | 1583  | 0     | 1358  | 1531  | 0     | 2995  | 0    | 0     | 2530  | 0    |
| Right Turn on Red       |       |       | Yes   |       |       | No    |       |       | Yes  |       |       | Yes  |
| Satd. Flow (RTOR)       |       |       | 128   |       |       |       |       | 14    |      |       | 10    |      |
| Link Speed (mph)        |       | 30    |       |       | 25    |       |       | 30    |      |       | 30    |      |
| Link Distance (ft)      |       | 87    |       |       | 499   |       |       | 713   |      |       | 293   |      |
| Travel Time (s)         |       | 2.0   |       |       | 13.6  |       |       | 16.2  |      |       | 6.7   |      |
| Peak Hour Factor        | 0.88  | 0.88  | 0.88  | 0.80  | 0.80  | 0.80  | 0.97  | 0.97  | 0.97 | 0.96  | 0.96  | 0.96 |
| Adj. Flow (vph)         | 39    | 20    | 45    | 104   | 26    | 155   | 35    | 812   | 73   | 106   | 867   | 43   |
| Shared Lane Traffic (%) |       |       |       |       |       |       |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 0     | 59    | 45    | 0     | 130   | 155   | 0     | 920   | 0    | 0     | 1016  | 0    |
| Turn Type               | Perm  | NA    | Perm  | Perm  | NA    | Perm  | Perm  | NA    |      | pm+pt | NA    |      |
| Protected Phases        |       | 4     |       |       | 8     |       |       | 2     |      | 1     | 6     |      |
| Permitted Phases        | 4     |       | 4     | 8     |       | 8     | 2     |       |      | 6     |       |      |
| Detector Phase          | 4     | 4     | 4     | 8     | 8     | 8     | 2     | 2     |      | 1     | 6     |      |
| Switch Phase            |       |       |       |       |       |       |       |       |      |       |       |      |
| Minimum Initial (s)     | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 15.0  | 15.0  |      | 3.0   | 15.0  |      |
| Minimum Split (s)       | 13.0  | 13.0  | 13.0  | 13.0  | 13.0  | 13.0  | 20.3  | 20.3  |      | 9.5   | 20.3  |      |
| Total Split (s)         | 25.0  | 25.0  | 25.0  | 25.0  | 25.0  | 25.0  | 36.0  | 36.0  |      | 14.0  | 50.0  |      |
| Total Split (%)         | 33.3% | 33.3% | 33.3% | 33.3% | 33.3% | 33.3% | 48.0% | 48.0% |      | 18.7% | 66.7% |      |
| Yellow Time (s)         | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 4.3   | 4.3   |      | 4.3   | 4.3   |      |
| All-Red Time (s)        | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |      | 2.2   | 1.0   |      |
| Lost Time Adjust (s)    |       | 0.0   | 0.0   |       | 0.0   | 0.0   |       | 0.0   |      |       | 0.0   |      |
| Total Lost Time (s)     |       | 4.0   | 4.0   |       | 4.0   | 4.0   |       | 5.3   |      |       | 5.3   |      |
| Lead/Lag                |       |       |       |       |       |       | Lead  | Lead  |      | Lag   |       |      |
| Lead-Lag Optimize?      |       |       |       |       |       |       | Yes   | Yes   |      | Yes   |       |      |
| Recall Mode             | None  | None  | None  | None  | None  | None  | C-Max | C-Max |      | None  | C-Max |      |
| Act Effect Green (s)    |       | 12.5  | 12.5  |       | 12.5  | 12.5  |       | 53.2  |      |       | 53.2  |      |
| Actuated g/C Ratio      |       | 0.17  | 0.17  |       | 0.17  | 0.17  |       | 0.71  |      |       | 0.71  |      |
| v/c Ratio               |       | 0.25  | 0.12  |       | 0.58  | 0.61  |       | 0.43  |      |       | 0.56  |      |
| Control Delay           |       | 28.5  | 0.7   |       | 38.6  | 38.9  |       | 5.7   |      |       | 4.3   |      |
| Queue Delay             |       | 0.0   | 0.0   |       | 0.0   | 0.0   |       | 0.0   |      |       | 0.0   |      |
| Total Delay             |       | 28.5  | 0.7   |       | 38.6  | 38.9  |       | 5.7   |      |       | 4.3   |      |
| LOS                     |       | C     | A     |       | D     | D     |       | A     |      |       | A     |      |
| Approach Delay          |       | 16.5  |       |       | 38.8  |       |       | 5.7   |      |       | 4.3   |      |
| Approach LOS            |       | B     |       |       | D     |       |       | A     |      |       | A     |      |
| Queue Length 50th (ft)  |       | 24    | 0     |       | 57    | 68    |       | 72    |      |       | 18    |      |

# 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road Existing Conditions Lanes, Volumes, Timings

Timing Plan: Saturday Midday

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 51                                                                                | 0                                                                                 |                                                                                   | 88                                                                                | 101                                                                               |                                                                                    | 136                                                                                 |                                                                                     |                                                                                     | 258                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 7                                                                                 |                                                                                   |                                                                                   | 419                                                                               |                                                                                   |                                                                                    | 633                                                                                 |                                                                                     |                                                                                     | 213                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 75                                                                                |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 399                                                                               | 535                                                                               |                                                                                   | 380                                                                               | 428                                                                               |                                                                                    | 2129                                                                                |                                                                                     |                                                                                     | 1799                                                                                |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.15                                                                              | 0.08                                                                              |                                                                                   | 0.34                                                                              | 0.36                                                                              |                                                                                    | 0.43                                                                                |                                                                                     |                                                                                     | 0.57                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 48 (64%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 9.6

Intersection LOS: A

Intersection Capacity Utilization 76.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road

|                                                                                            |                                                                                        |                                                                                         |
|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|  Ø2 (R)  |  Ø1  |  Ø4 |
| 36 s                                                                                       | 14 s                                                                                   | 25 s                                                                                    |
|  Ø6 (R) |  Ø8 |                                                                                         |
| 50 s                                                                                       |                                                                                        | 25 s                                                                                    |



# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Existing Conditions Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (vph)    | 81                                                                                | 641                                                                               | 161                                                                               | 134                                                                               | 620                                                                               | 151                                                                               | 220                                                                                 | 198                                                                                 | 148                                                                                 | 228                                                                                 | 260                                                                                 | 58                                                                                  |
| Future Volume (vph)     | 81                                                                                | 641                                                                               | 161                                                                               | 134                                                                               | 620                                                                               | 151                                                                               | 220                                                                                 | 198                                                                                 | 148                                                                                 | 228                                                                                 | 260                                                                                 | 58                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 11                                                                                | 11                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                  | 11                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 200                                                                               |                                                                                   | 0                                                                                 | 175                                                                               |                                                                                   | 0                                                                                 | 210                                                                                 |                                                                                     | 0                                                                                   | 170                                                                                 |                                                                                     | 0                                                                                   |
| Storage Lanes           | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                   |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 85                                                                                |                                                                                   |                                                                                   | 75                                                                                |                                                                                   |                                                                                   | 100                                                                                 |                                                                                     |                                                                                     | 100                                                                                 |                                                                                     |                                                                                     |
| Lane Util. Factor       | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.970                                                                             |                                                                                   |                                                                                   | 0.971                                                                             |                                                                                   |                                                                                     | 0.936                                                                               |                                                                                     |                                                                                     | 0.973                                                                               |                                                                                     |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1711                                                                              | 3319                                                                              | 0                                                                                 | 1711                                                                              | 3437                                                                              | 0                                                                                 | 1711                                                                                | 1685                                                                                | 0                                                                                   | 1770                                                                                | 1812                                                                                | 0                                                                                   |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.275                                                                               |                                                                                     |                                                                                     | 0.225                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 1711                                                                              | 3319                                                                              | 0                                                                                 | 1711                                                                              | 3437                                                                              | 0                                                                                 | 495                                                                                 | 1685                                                                                | 0                                                                                   | 419                                                                                 | 1812                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | No                                                                                  |
| Satd. Flow (RTOR)       |                                                                                   | 19                                                                                |                                                                                   |                                                                                   | 18                                                                                |                                                                                   |                                                                                     | 22                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 436                                                                               |                                                                                   |                                                                                   | 368                                                                               |                                                                                   |                                                                                     | 438                                                                                 |                                                                                     |                                                                                     | 355                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.9                                                                               |                                                                                   |                                                                                   | 8.4                                                                               |                                                                                   |                                                                                     | 10.0                                                                                |                                                                                     |                                                                                     | 9.7                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                |
| Adj. Flow (vph)         | 90                                                                                | 712                                                                               | 179                                                                               | 147                                                                               | 681                                                                               | 166                                                                               | 244                                                                                 | 220                                                                                 | 164                                                                                 | 259                                                                                 | 295                                                                                 | 66                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 90                                                                                | 891                                                                               | 0                                                                                 | 147                                                                               | 847                                                                               | 0                                                                                 | 244                                                                                 | 384                                                                                 | 0                                                                                   | 259                                                                                 | 361                                                                                 | 0                                                                                   |
| Turn Type               | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | NA                                                                                |                                                                                   | pm+pt                                                                               | NA                                                                                  |                                                                                     | pm+pt                                                                               | NA                                                                                  |                                                                                     |
| Protected Phases        | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 7                                                                                   | 4                                                                                   |                                                                                     | 3                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 7                                                                                   | 4                                                                                   |                                                                                     | 3                                                                                   | 8                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 15.0                                                                              |                                                                                   | 5.0                                                                               | 15.0                                                                              |                                                                                   | 5.0                                                                                 | 10.0                                                                                |                                                                                     | 5.0                                                                                 | 10.0                                                                                |                                                                                     |
| Minimum Split (s)       | 9.7                                                                               | 21.6                                                                              |                                                                                   | 9.7                                                                               | 21.6                                                                              |                                                                                   | 9.3                                                                                 | 16.8                                                                                |                                                                                     | 9.3                                                                                 | 16.8                                                                                |                                                                                     |
| Total Split (s)         | 17.7                                                                              | 41.6                                                                              |                                                                                   | 17.7                                                                              | 41.6                                                                              |                                                                                   | 22.3                                                                                | 36.8                                                                                |                                                                                     | 22.3                                                                                | 36.8                                                                                |                                                                                     |
| Total Split (%)         | 11.7%                                                                             | 27.5%                                                                             |                                                                                   | 11.7%                                                                             | 27.5%                                                                             |                                                                                   | 14.7%                                                                               | 24.3%                                                                               |                                                                                     | 14.7%                                                                               | 24.3%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.0                                                                               | 4.1                                                                               |                                                                                   | 3.0                                                                               | 4.1                                                                               |                                                                                   | 3.3                                                                                 | 4.4                                                                                 |                                                                                     | 3.3                                                                                 | 4.4                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.7                                                                               | 2.5                                                                               |                                                                                   | 1.7                                                                               | 2.5                                                                               |                                                                                   | 1.0                                                                                 | 2.4                                                                                 |                                                                                     | 1.0                                                                                 | 2.4                                                                                 |                                                                                     |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     | 4.7                                                                               | 6.6                                                                               |                                                                                   | 4.7                                                                               | 6.6                                                                               |                                                                                   | 4.3                                                                                 | 6.8                                                                                 |                                                                                     | 4.3                                                                                 | 6.8                                                                                 |                                                                                     |
| Lead/Lag                | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                                | Lag                                                                                 |                                                                                     | Lead                                                                                | Lag                                                                                 |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                 | Yes                                                                                 |                                                                                     | Yes                                                                                 | Yes                                                                                 |                                                                                     |
| Recall Mode             | None                                                                              | Min                                                                               |                                                                                   | None                                                                              | Min                                                                               |                                                                                   | None                                                                                | None                                                                                |                                                                                     | None                                                                                | None                                                                                |                                                                                     |
| Act Effct Green (s)     | 10.2                                                                              | 35.0                                                                              |                                                                                   | 13.0                                                                              | 37.8                                                                              |                                                                                   | 50.1                                                                                | 30.0                                                                                |                                                                                     | 50.9                                                                                | 30.4                                                                                |                                                                                     |
| Actuated g/C Ratio      | 0.09                                                                              | 0.30                                                                              |                                                                                   | 0.11                                                                              | 0.32                                                                              |                                                                                   | 0.42                                                                                | 0.25                                                                                |                                                                                     | 0.43                                                                                | 0.26                                                                                |                                                                                     |
| v/c Ratio               | 0.61                                                                              | 0.90                                                                              |                                                                                   | 0.79                                                                              | 0.76                                                                              |                                                                                   | 0.63                                                                                | 0.87                                                                                |                                                                                     | 0.67                                                                                | 0.78                                                                                |                                                                                     |
| Control Delay           | 69.5                                                                              | 51.9                                                                              |                                                                                   | 79.6                                                                              | 41.3                                                                              |                                                                                   | 27.9                                                                                | 60.5                                                                                |                                                                                     | 29.8                                                                                | 53.8                                                                                |                                                                                     |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Delay             | 69.5                                                                              | 51.9                                                                              |                                                                                   | 79.6                                                                              | 41.3                                                                              |                                                                                   | 27.9                                                                                | 60.5                                                                                |                                                                                     | 29.8                                                                                | 53.8                                                                                |                                                                                     |
| LOS                     | E                                                                                 | D                                                                                 |                                                                                   | E                                                                                 | D                                                                                 |                                                                                   | C                                                                                   | E                                                                                   |                                                                                     | C                                                                                   | D                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 53.5                                                                              |                                                                                   |                                                                                   | 47.0                                                                              |                                                                                   |                                                                                     | 47.8                                                                                |                                                                                     |                                                                                     | 43.8                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Queue Length 50th (ft)  | 67                                                                                | 336                                                                               |                                                                                   | 111                                                                               | 300                                                                               |                                                                                   | 114                                                                                 | 267                                                                                 |                                                                                     | 121                                                                                 | 258                                                                                 |                                                                                     |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Existing Conditions Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |      |
|-------------------------|------|
| Lane Group              | Ø9   |
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 33.0 |
| Total Split (s)         | 33.0 |
| Total Split (%)         | 22%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Existing Conditions Lanes, Volumes, Timings

Timing Plan: Saturday Midday

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  | 120                                                                               | #454                                                                              |                                                                                   | #218                                                                              | 391                                                                               |                                                                                   | 174                                                                                | #440                                                                                |                                                                                     | 178                                                                                 | #381                                                                                |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 356                                                                               |                                                                                   |                                                                                   | 288                                                                               |                                                                                   |                                                                                    | 358                                                                                 |                                                                                     |                                                                                     | 275                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 200                                                                               |                                                                                   |                                                                                   | 175                                                                               |                                                                                   |                                                                                   | 210                                                                                |                                                                                     |                                                                                     | 170                                                                                 |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 187                                                                               | 994                                                                               |                                                                                   | 187                                                                               | 1109                                                                              |                                                                                   | 395                                                                                | 443                                                                                 |                                                                                     | 385                                                                                 | 465                                                                                 |                                                                                     |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       | 0.48                                                                              | 0.90                                                                              |                                                                                   | 0.79                                                                              | 0.76                                                                              |                                                                                   | 0.62                                                                               | 0.87                                                                                |                                                                                     | 0.67                                                                                | 0.78                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 151.4

Actuated Cycle Length: 118.4

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 48.5

Intersection LOS: D

Intersection Capacity Utilization 81.0%

ICU Level of Service D

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)

|                                                                                        |                                                                                        |                                                                                        |                                                                                         |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø9 |  Ø3 |  Ø4 |
| 17.7 s                                                                                 | 41.6 s                                                                                 | 33 s                                                                                   | 22.3 s                                                                                  | 36.8 s                                                                                   |
|  Ø5 |  Ø6 |                                                                                        |  Ø7 |  Ø8 |
| 17.7 s                                                                                 | 41.6 s                                                                                 |                                                                                        | 22.3 s                                                                                  | 36.8 s                                                                                   |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø9 |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |



# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & R2017 SR (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Saturday Midday

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                   |  |  |                                                                                     |  |  |
| Traffic Volume (vph)    | 89                                                                                | 751                                                                               | 45                                                                                | 76                                                                                | 713                                                                               | 90                                                                                | 161                                                                               | 22                                                                                  | 127                                                                                 | 74                                                                                  | 19                                                                                  | 39                                                                                  |
| Future Volume (vph)     | 89                                                                                | 751                                                                               | 45                                                                                | 76                                                                                | 713                                                                               | 90                                                                                | 161                                                                               | 22                                                                                  | 127                                                                                 | 74                                                                                  | 19                                                                                  | 39                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 13                                                                                  | 13                                                                                  | 12                                                                                  | 13                                                                                  | 13                                                                                  |
| Storage Length (ft)     | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                     | 25                                                                                  | 0                                                                                   |                                                                                     | 25                                                                                  |
| Storage Lanes           | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                     | 1                                                                                   | 0                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)       | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.992                                                                             |                                                                                   |                                                                                   | 0.985                                                                             |                                                                                   |                                                                                   |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected           |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                   | 0.958                                                                               |                                                                                     |                                                                                     | 0.962                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3377                                                                              | 0                                                                                 | 0                                                                                 | 3356                                                                              | 0                                                                                 | 0                                                                                 | 1844                                                                                | 1636                                                                                | 0                                                                                   | 1852                                                                                | 1636                                                                                |
| Flt Permitted           |                                                                                   | 0.682                                                                             |                                                                                   |                                                                                   | 0.771                                                                             |                                                                                   |                                                                                   | 0.673                                                                               |                                                                                     |                                                                                     | 0.666                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 2315                                                                              | 0                                                                                 | 0                                                                                 | 2598                                                                              | 0                                                                                 | 0                                                                                 | 1295                                                                                | 1636                                                                                | 0                                                                                   | 1282                                                                                | 1636                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 9                                                                                 |                                                                                   |                                                                                   | 17                                                                                |                                                                                   |                                                                                   |                                                                                     | 157                                                                                 |                                                                                     |                                                                                     | 157                                                                                 |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 442                                                                               |                                                                                   |                                                                                   | 502                                                                               |                                                                                   |                                                                                   | 142                                                                                 |                                                                                     |                                                                                     | 135                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                   | 3.9                                                                                 |                                                                                     |                                                                                     | 3.7                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.81                                                                                | 0.81                                                                                | 0.81                                                                                |
| Adj. Flow (vph)         | 93                                                                                | 782                                                                               | 47                                                                                | 80                                                                                | 751                                                                               | 95                                                                                | 175                                                                               | 24                                                                                  | 138                                                                                 | 91                                                                                  | 23                                                                                  | 48                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 922                                                                               | 0                                                                                 | 0                                                                                 | 926                                                                               | 0                                                                                 | 0                                                                                 | 199                                                                                 | 138                                                                                 | 0                                                                                   | 114                                                                                 | 48                                                                                  |
| Turn Type               | pm+pt                                                                             | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                  | Perm                                                                                | Perm                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases        | 1                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                     | 4                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   |
| Detector Phase          | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0                                                                               | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |
| Minimum Split (s)       | 9.0                                                                               | 20.8                                                                              |                                                                                   | 20.8                                                                              | 20.8                                                                              |                                                                                   | 11.0                                                                              | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                |
| Total Split (s)         | 9.0                                                                               | 39.0                                                                              |                                                                                   | 30.0                                                                              | 30.0                                                                              |                                                                                   | 14.0                                                                              | 14.0                                                                                | 14.0                                                                                | 14.0                                                                                | 14.0                                                                                | 14.0                                                                                |
| Total Split (%)         | 12.0%                                                                             | 52.0%                                                                             |                                                                                   | 40.0%                                                                             | 40.0%                                                                             |                                                                                   | 18.7%                                                                             | 18.7%                                                                               | 18.7%                                                                               | 18.7%                                                                               | 18.7%                                                                               | 18.7%                                                                               |
| Yellow Time (s)         | 3.0                                                                               | 4.3                                                                               |                                                                                   | 4.3                                                                               | 4.3                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| All-Red Time (s)        | 1.0                                                                               | 1.5                                                                               |                                                                                   | 1.5                                                                               | 1.5                                                                               |                                                                                   | 1.0                                                                               | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     |                                                                                   | 5.8                                                                               |                                                                                   |                                                                                   | 5.8                                                                               |                                                                                   |                                                                                   | 4.0                                                                                 | 4.0                                                                                 |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |
| Lead/Lag                | Lead                                                                              |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               |                                                                                   | Lag                                                                               | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode             | Min                                                                               | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                              | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Act Effct Green (s)     |                                                                                   | 42.9                                                                              |                                                                                   |                                                                                   | 33.4                                                                              |                                                                                   |                                                                                   | 22.3                                                                                | 22.3                                                                                |                                                                                     | 22.3                                                                                | 22.3                                                                                |
| Actuated g/C Ratio      |                                                                                   | 0.57                                                                              |                                                                                   |                                                                                   | 0.45                                                                              |                                                                                   |                                                                                   | 0.30                                                                                | 0.30                                                                                |                                                                                     | 0.30                                                                                | 0.30                                                                                |
| v/c Ratio               |                                                                                   | 0.67                                                                              |                                                                                   |                                                                                   | 0.79                                                                              |                                                                                   |                                                                                   | 0.52                                                                                | 0.23                                                                                |                                                                                     | 0.30                                                                                | 0.08                                                                                |
| Control Delay           |                                                                                   | 13.2                                                                              |                                                                                   |                                                                                   | 13.7                                                                              |                                                                                   |                                                                                   | 27.8                                                                                | 3.9                                                                                 |                                                                                     | 23.2                                                                                | 0.3                                                                                 |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             |                                                                                   | 13.2                                                                              |                                                                                   |                                                                                   | 13.7                                                                              |                                                                                   |                                                                                   | 27.8                                                                                | 3.9                                                                                 |                                                                                     | 23.2                                                                                | 0.3                                                                                 |
| LOS                     |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                   | A                                                                                   |                                                                                     | C                                                                                   | A                                                                                   |
| Approach Delay          |                                                                                   | 13.2                                                                              |                                                                                   |                                                                                   | 13.7                                                                              |                                                                                   |                                                                                   | 18.1                                                                                |                                                                                     |                                                                                     | 16.4                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 114                                                                               |                                                                                   |                                                                                   | 65                                                                                |                                                                                   |                                                                                   | 78                                                                                  | 0                                                                                   |                                                                                     | 42                                                                                  | 0                                                                                   |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & R2017 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

| Lane Group              | Ø3   |
|-------------------------|------|
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 3    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 22.0 |
| Total Split (s)         | 22.0 |
| Total Split (%)         | 29%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                | Lead |
| Lead-Lag Optimize?      | Yes  |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 166                                                                               |                                                                                   |                                                                                   | 82                                                                                |                                                                                   |                                                                                    | 139                                                                                 | 30                                                                                  |                                                                                     | 72                                                                                  | 0                                                                                   |
| Internal Link Dist (ft) |                                                                                   | 362                                                                               |                                                                                   |                                                                                   | 422                                                                               |                                                                                   |                                                                                    | 62                                                                                  |                                                                                     |                                                                                     | 55                                                                                  |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |
| Base Capacity (vph)     |                                                                                   | 1381                                                                              |                                                                                   |                                                                                   | 1167                                                                              |                                                                                   |                                                                                    | 384                                                                                 | 596                                                                                 |                                                                                     | 380                                                                                 | 596                                                                                 |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       |                                                                                   | 0.67                                                                              |                                                                                   |                                                                                   | 0.79                                                                              |                                                                                   |                                                                                    | 0.52                                                                                | 0.23                                                                                |                                                                                     | 0.30                                                                                | 0.08                                                                                |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 19 (25%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 14.3

Intersection LOS: B

Intersection Capacity Utilization 79.3%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)

|  Ø1      |  Ø2 (R) |  Ø3 |  Ø4 |
|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 9 s                                                                                        | 30 s                                                                                      | 22 s                                                                                  | 14 s                                                                                    |
|  Ø6 (R) |                                                                                           |                                                                                       |                                                                                         |
| 39 s                                                                                       |                                                                                           |                                                                                       |                                                                                         |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø3 |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |



# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) 2017 Existing Conditions Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                   |  |  |  |  |                                                                                     |
| Traffic Volume (vph)    | 11                                                                                | 851                                                                               | 123                                                                               | 55                                                                                | 835                                                                               | 0                                                                                 | 115                                                                               | 3                                                                                   | 49                                                                                  | 3                                                                                   | 1                                                                                   | 9                                                                                   |
| Future Volume (vph)     | 11                                                                                | 851                                                                               | 123                                                                               | 55                                                                                | 835                                                                               | 0                                                                                 | 115                                                                               | 3                                                                                   | 49                                                                                  | 3                                                                                   | 1                                                                                   | 9                                                                                   |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 10                                                                                  | 10                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                     | 250                                                                                 | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes           | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.981                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | 0.850                                                                               |                                                                                     | 0.864                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.999                                                                             |                                                                                   |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                   | 0.954                                                                               |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3353                                                                              | 0                                                                                 | 0                                                                                 | 3411                                                                              | 0                                                                                 | 0                                                                                 | 1659                                                                                | 1478                                                                                | 1770                                                                                | 1609                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.947                                                                             |                                                                                   |                                                                                   | 0.805                                                                             |                                                                                   |                                                                                   | 0.724                                                                               |                                                                                     | 0.680                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 3178                                                                              | 0                                                                                 | 0                                                                                 | 2754                                                                              | 0                                                                                 | 0                                                                                 | 1259                                                                                | 1478                                                                                | 1267                                                                                | 1609                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 43                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | 111                                                                                 |                                                                                     | 10                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 502                                                                               |                                                                                   |                                                                                   | 407                                                                               |                                                                                   |                                                                                   | 423                                                                                 |                                                                                     |                                                                                     | 198                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                   | 11.5                                                                                |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.98                                                                              | 0.98                                                                                | 0.98                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                |
| Adj. Flow (vph)         | 12                                                                                | 946                                                                               | 137                                                                               | 57                                                                                | 861                                                                               | 0                                                                                 | 117                                                                               | 3                                                                                   | 50                                                                                  | 3                                                                                   | 1                                                                                   | 10                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 1095                                                                              | 0                                                                                 | 0                                                                                 | 918                                                                               | 0                                                                                 | 0                                                                                 | 120                                                                                 | 50                                                                                  | 3                                                                                   | 11                                                                                  | 0                                                                                   |
| Turn Type               | pm+pt                                                                             | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                  | Perm                                                                                | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        | 1                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                     | 4                                                                                   | 4                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 3.0                                                                               | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0                                                                               | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 7.3                                                                               | 21.3                                                                              |                                                                                   | 21.3                                                                              | 21.3                                                                              |                                                                                   | 11.9                                                                              | 11.9                                                                                | 11.9                                                                                | 11.9                                                                                | 11.9                                                                                |                                                                                     |
| Total Split (s)         | 7.3                                                                               | 55.0                                                                              |                                                                                   | 47.7                                                                              | 47.7                                                                              |                                                                                   | 20.0                                                                              | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                |                                                                                     |
| Total Split (%)         | 9.7%                                                                              | 73.3%                                                                             |                                                                                   | 63.6%                                                                             | 63.6%                                                                             |                                                                                   | 26.7%                                                                             | 26.7%                                                                               | 26.7%                                                                               | 26.7%                                                                               | 26.7%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.3                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.0                                                                               | 1.3                                                                               |                                                                                   | 1.3                                                                               | 1.3                                                                               |                                                                                   | 1.9                                                                               | 1.9                                                                                 | 1.9                                                                                 | 1.9                                                                                 | 1.9                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 6.3                                                                               |                                                                                   |                                                                                   | 6.3                                                                               |                                                                                   |                                                                                   | 4.9                                                                                 | 4.9                                                                                 | 4.9                                                                                 | 4.9                                                                                 |                                                                                     |
| Lead/Lag                | Lead                                                                              |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | Max                                                                               | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                              | None                                                                                | None                                                                                | None                                                                                | None                                                                                |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 55.3                                                                              |                                                                                   |                                                                                   | 41.4                                                                              |                                                                                   |                                                                                   | 10.9                                                                                | 10.9                                                                                | 10.9                                                                                | 10.9                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.74                                                                              |                                                                                   |                                                                                   | 0.55                                                                              |                                                                                   |                                                                                   | 0.15                                                                                | 0.15                                                                                | 0.15                                                                                | 0.15                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.46                                                                              |                                                                                   |                                                                                   | 0.60                                                                              |                                                                                   |                                                                                   | 0.66                                                                                | 0.16                                                                                | 0.02                                                                                | 0.05                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 3.5                                                                               |                                                                                   |                                                                                   | 8.1                                                                               |                                                                                   |                                                                                   | 47.0                                                                                | 1.3                                                                                 | 25.0                                                                                | 15.1                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 3.5                                                                               |                                                                                   |                                                                                   | 8.1                                                                               |                                                                                   |                                                                                   | 47.0                                                                                | 1.3                                                                                 | 25.0                                                                                | 15.1                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | D                                                                                   | A                                                                                   | C                                                                                   | B                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 3.5                                                                               |                                                                                   |                                                                                   | 8.1                                                                               |                                                                                   |                                                                                   | 33.6                                                                                |                                                                                     |                                                                                     | 17.2                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 60                                                                                |                                                                                   |                                                                                   | 49                                                                                |                                                                                   |                                                                                   | 54                                                                                  | 0                                                                                   | 1                                                                                   | 0                                                                                   |                                                                                     |

# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) 2017 Existing Conditions Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 90                                                                                |                                                                                   |                                                                                   | 61                                                                                |                                                                                   |                                                                                    | 100                                                                                 | 3                                                                                   | 8                                                                                   | 13                                                                                  |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 422                                                                               |                                                                                   |                                                                                   | 327                                                                               |                                                                                   |                                                                                    | 343                                                                                 |                                                                                     |                                                                                     | 118                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 250                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 2373                                                                              |                                                                                   |                                                                                   | 1520                                                                              |                                                                                   |                                                                                    | 253                                                                                 | 386                                                                                 | 255                                                                                 | 331                                                                                 |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 13                                                                                |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.46                                                                              |                                                                                   |                                                                                   | 0.61                                                                              |                                                                                   |                                                                                    | 0.47                                                                                | 0.13                                                                                | 0.01                                                                                | 0.03                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 21 (28%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 7.8

Intersection LOS: A

Intersection Capacity Utilization 80.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                           |                                                                                         |
|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|  Ø1      |  Ø2 (R) |  Ø4 |
| 7.3 s                                                                                      | 47.7 s                                                                                    | 20 s                                                                                    |
|  Ø6 (R) |                                                                                           |                                                                                         |
| 55 s                                                                                       |                                                                                           |                                                                                         |

## 108: Burroughs Road &amp; Route 58 (Black Rock Turnpike)

2017 Existing Conditions

## Lanes, Volumes, Timings

Timing Plan: Saturday Midday

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 76                                                                                | 825                                                                               | 14                                                                                | 4                                                                                 | 813                                                                               | 106                                                                               | 19                                                                                 | 60                                                                                  | 9                                                                                   | 119                                                                                 | 49                                                                                  | 61                                                                                  |
| Future Volume (vph)     | 76                                                                                | 825                                                                               | 14                                                                                | 4                                                                                 | 813                                                                               | 106                                                                               | 19                                                                                 | 60                                                                                  | 9                                                                                   | 119                                                                                 | 49                                                                                  | 61                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                 | 16                                                                                  | 12                                                                                  | 12                                                                                  | 16                                                                                  | 12                                                                                  |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   | 0.983                                                                             |                                                                                   |                                                                                    | 0.986                                                                               |                                                                                     |                                                                                     | 0.964                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 0.989                                                                               |                                                                                     |                                                                                     | 0.975                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3401                                                                              | 0                                                                                 | 0                                                                                 | 3363                                                                              | 0                                                                                 | 0                                                                                  | 2059                                                                                | 0                                                                                   | 0                                                                                   | 1984                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.776                                                                             |                                                                                   |                                                                                   | 0.952                                                                             |                                                                                   |                                                                                    | 0.898                                                                               |                                                                                     |                                                                                     | 0.820                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 2650                                                                              | 0                                                                                 | 0                                                                                 | 3202                                                                              | 0                                                                                 | 0                                                                                  | 1869                                                                                | 0                                                                                   | 0                                                                                   | 1669                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 3                                                                                 |                                                                                   |                                                                                   | 28                                                                                |                                                                                   |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     | 27                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 407                                                                               |                                                                                   |                                                                                   | 996                                                                               |                                                                                   |                                                                                    | 466                                                                                 |                                                                                     |                                                                                     | 300                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                   | 22.6                                                                              |                                                                                   |                                                                                    | 12.7                                                                                |                                                                                     |                                                                                     | 8.2                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.88                                                                               | 0.88                                                                                | 0.88                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Adj. Flow (vph)         | 83                                                                                | 897                                                                               | 15                                                                                | 4                                                                                 | 856                                                                               | 112                                                                               | 22                                                                                 | 68                                                                                  | 10                                                                                  | 128                                                                                 | 53                                                                                  | 66                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 995                                                                               | 0                                                                                 | 0                                                                                 | 972                                                                               | 0                                                                                 | 0                                                                                  | 100                                                                                 | 0                                                                                   | 0                                                                                   | 247                                                                                 | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                  |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 6                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                  | 4                                                                                   |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 15.0                                                                              | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 9.0                                                                                | 9.0                                                                                 |                                                                                     | 9.0                                                                                 | 9.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 20.6                                                                              | 20.6                                                                              |                                                                                   | 20.6                                                                              | 20.6                                                                              |                                                                                   | 14.4                                                                               | 14.4                                                                                |                                                                                     | 14.4                                                                                | 14.4                                                                                |                                                                                     |
| Total Split (s)         | 44.0                                                                              | 44.0                                                                              |                                                                                   | 44.0                                                                              | 44.0                                                                              |                                                                                   | 31.0                                                                               | 31.0                                                                                |                                                                                     | 31.0                                                                                | 31.0                                                                                |                                                                                     |
| Total Split (%)         | 58.7%                                                                             | 58.7%                                                                             |                                                                                   | 58.7%                                                                             | 58.7%                                                                             |                                                                                   | 41.3%                                                                              | 41.3%                                                                               |                                                                                     | 41.3%                                                                               | 41.3%                                                                               |                                                                                     |
| Yellow Time (s)         | 4.1                                                                               | 4.1                                                                               |                                                                                   | 4.1                                                                               | 4.1                                                                               |                                                                                   | 3.1                                                                                | 3.1                                                                                 |                                                                                     | 3.1                                                                                 | 3.1                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.5                                                                               | 1.5                                                                               |                                                                                   | 1.5                                                                               | 1.5                                                                               |                                                                                   | 2.3                                                                                | 2.3                                                                                 |                                                                                     | 2.3                                                                                 | 2.3                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                    | 5.4                                                                                 |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | C-Max                                                                             | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                               | None                                                                                |                                                                                     | None                                                                                | None                                                                                |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 48.9                                                                              |                                                                                   |                                                                                   | 48.9                                                                              |                                                                                   |                                                                                    | 15.1                                                                                |                                                                                     |                                                                                     | 15.1                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.65                                                                              |                                                                                   |                                                                                   | 0.65                                                                              |                                                                                   |                                                                                    | 0.20                                                                                |                                                                                     |                                                                                     | 0.20                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.58                                                                              |                                                                                   |                                                                                   | 0.46                                                                              |                                                                                   |                                                                                    | 0.26                                                                                |                                                                                     |                                                                                     | 0.69                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                   | 7.9                                                                               |                                                                                   |                                                                                    | 23.2                                                                                |                                                                                     |                                                                                     | 34.3                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                   | 7.9                                                                               |                                                                                   |                                                                                    | 23.2                                                                                |                                                                                     |                                                                                     | 34.3                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                   | 7.9                                                                               |                                                                                   |                                                                                    | 23.2                                                                                |                                                                                     |                                                                                     | 34.3                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 38                                                                                |                                                                                   |                                                                                   | 98                                                                                |                                                                                   |                                                                                    | 36                                                                                  |                                                                                     |                                                                                     | 96                                                                                  |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 72                                                                                |                                                                                   |                                                                                   | 178                                                                               |                                                                                   |                                                                                    | 66                                                                                  |                                                                                     |                                                                                     | 151                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 327                                                                               |                                                                                   |                                                                                   | 916                                                                               |                                                                                   |                                                                                    | 386                                                                                 |                                                                                     |                                                                                     | 220                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

108: Burroughs Road & Route 58 (Black Rock Turnpike)  
Lanes, Volumes, Timings

2017 Existing Conditions

Timing Plan: Saturday MIDDAY

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Base Capacity (vph)    |                                                                                   | 1729                                                                              |                                                                                   |                                                                                   | 2098                                                                              |                                                                                   |                                                                                   | 643                                                                                 |                                                                                     |                                                                                     | 587                                                                                 |                                                                                     |
| Starvation Cap Reductn |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   | 0.58                                                                              |                                                                                   |                                                                                   | 0.46                                                                              |                                                                                   |                                                                                   | 0.16                                                                                |                                                                                     |                                                                                     | 0.42                                                                                |                                                                                     |

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 20 (27%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 10.4

Intersection LOS: B

Intersection Capacity Utilization 84.8%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)

|                                                                                          |                                                                                   |
|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|  Ø2 (R) |  |
| 44 s                                                                                     | 31 s                                                                              |
|  Ø6 (R) |  |
| 44 s                                                                                     | 31 s                                                                              |



# 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) 201 Rte 50 (Black Rock Turnpike)

## Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         | →     | ↖     | ↗    | ↘     | ↙     | ↘     | ↗    | ↙     | ↘     | ↗    | ↙    | ↘     |
|-------------------------|-------|-------|------|-------|-------|-------|------|-------|-------|------|------|-------|
| Lane Group              | EBT   | EBR   | EBR2 | WBL2  | WBL   | WBT   | WBR  | NWL2  | NWL   | NWR  | NWR2 | NEL   |
| Lane Configurations     | ↖     | ↗     |      |       |       | ↖↗    |      |       | ↖↗    |      |      |       |
| Traffic Volume (vph)    | 409   | 522   | 5    | 63    | 3     | 445   | 1    | 4     | 442   | 9    | 33   | 5     |
| Future Volume (vph)     | 409   | 522   | 5    | 63    | 3     | 445   | 1    | 4     | 442   | 9    | 33   | 5     |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900 | 1900  |
| Lane Width (ft)         | 12    | 12    | 12   | 12    | 11    | 11    | 12   | 12    | 10    | 12   | 12   | 12    |
| Lane Util. Factor       | 1.00  | 1.00  | 1.00 | 0.95  | 0.95  | 0.95  | 0.95 | 0.95  | 0.97  | 0.95 | 0.95 | 1.00  |
| Frt                     |       | 0.850 |      |       |       |       |      |       | 0.987 |      |      |       |
| Flt Protected           |       |       |      |       |       | 0.994 |      |       | 0.956 |      |      |       |
| Satd. Flow (prot)       | 1863  | 1583  | 0    | 0     | 0     | 3401  | 0    | 0     | 3182  | 0    | 0    | 0     |
| Flt Permitted           |       |       |      |       |       | 0.748 |      |       | 0.948 |      |      |       |
| Satd. Flow (perm)       | 1863  | 1583  | 0    | 0     | 0     | 2559  | 0    | 0     | 3156  | 0    | 0    | 0     |
| Right Turn on Red       |       |       | Yes  |       |       |       | Yes  |       |       |      | Yes  |       |
| Satd. Flow (RTOR)       |       | 57    |      |       |       |       |      |       | 152   |      |      |       |
| Link Speed (mph)        | 30    |       |      |       |       | 30    |      |       | 30    |      |      |       |
| Link Distance (ft)      | 996   |       |      |       |       | 549   |      |       | 218   |      |      |       |
| Travel Time (s)         | 22.6  |       |      |       |       | 12.5  |      |       | 5.0   |      |      |       |
| Peak Hour Factor        | 0.94  | 0.94  | 0.94 | 0.92  | 0.92  | 0.92  | 0.92 | 0.96  | 0.96  | 0.96 | 0.96 | 0.80  |
| Adj. Flow (vph)         | 435   | 555   | 5    | 68    | 3     | 484   | 1    | 4     | 460   | 9    | 34   | 6     |
| Shared Lane Traffic (%) |       |       |      |       |       |       |      |       |       |      |      |       |
| Lane Group Flow (vph)   | 435   | 560   | 0    | 0     | 0     | 556   | 0    | 0     | 507   | 0    | 0    | 0     |
| Turn Type               | NA    | pm+ov |      | Perm  | Perm  | NA    |      | D.Pm  | Prot  |      |      | Perm  |
| Protected Phases        | 2     | 4     |      |       |       | 2     |      |       | 4     |      |      |       |
| Permitted Phases        |       | 2     |      | 2     | 2     |       |      | 4     |       |      |      | 5     |
| Detector Phase          | 2     | 4     |      | 2     | 2     | 2     |      | 4     | 4     |      |      | 5     |
| Switch Phase            |       |       |      |       |       |       |      |       |       |      |      |       |
| Minimum Initial (s)     | 15.0  | 9.0   |      | 15.0  | 15.0  | 15.0  |      | 9.0   | 9.0   |      |      | 5.0   |
| Minimum Split (s)       | 22.8  | 15.4  |      | 22.8  | 22.8  | 22.8  |      | 15.4  | 15.4  |      |      | 12.6  |
| Total Split (s)         | 35.8  | 33.4  |      | 35.8  | 35.8  | 35.8  |      | 33.4  | 33.4  |      |      | 19.6  |
| Total Split (%)         | 40.3% | 37.6% |      | 40.3% | 40.3% | 40.3% |      | 37.6% | 37.6% |      |      | 22.1% |
| Yellow Time (s)         | 4.1   | 3.3   |      | 4.1   | 4.1   | 4.1   |      | 3.3   | 3.3   |      |      | 3.3   |
| All-Red Time (s)        | 3.7   | 3.1   |      | 3.7   | 3.7   | 3.7   |      | 3.1   | 3.1   |      |      | 4.3   |
| Lost Time Adjust (s)    | 0.0   | 0.0   |      |       |       | 0.0   |      |       | 0.0   |      |      |       |
| Total Lost Time (s)     | 7.8   | 6.4   |      |       |       | 7.8   |      |       | 6.4   |      |      |       |
| Lead/Lag                |       |       |      |       |       |       |      |       |       |      |      |       |
| Lead-Lag Optimize?      |       |       |      |       |       |       |      |       |       |      |      |       |
| Recall Mode             | Min   | None  |      | Min   | Min   | Min   |      | None  | None  |      |      | None  |
| Act Effct Green (s)     | 19.7  | 45.0  |      |       |       | 19.7  |      |       | 12.0  |      |      |       |
| Actuated g/C Ratio      | 0.38  | 0.88  |      |       |       | 0.38  |      |       | 0.23  |      |      |       |
| v/c Ratio               | 0.61  | 0.40  |      |       |       | 0.56  |      |       | 0.59  |      |      |       |
| Control Delay           | 18.8  | 3.5   |      |       |       | 16.7  |      |       | 16.9  |      |      |       |
| Queue Delay             | 0.0   | 0.0   |      |       |       | 0.0   |      |       | 0.0   |      |      |       |
| Total Delay             | 18.8  | 3.5   |      |       |       | 16.7  |      |       | 16.9  |      |      |       |
| LOS                     | B     | A     |      |       |       | B     |      |       | B     |      |      |       |
| Approach Delay          | 10.2  |       |      |       |       | 16.7  |      |       | 16.9  |      |      |       |
| Approach LOS            | B     |       |      |       |       | B     |      |       | B     |      |      |       |
| Queue Length 50th (ft)  | 74    | 0     |      |       |       | 49    |      |       | 37    |      |      |       |
| Queue Length 95th (ft)  | 253   | 134   |      |       |       | 155   |      |       | 121   |      |      |       |
| Internal Link Dist (ft) | 916   |       |      |       |       | 469   |      |       | 138   |      |      |       |
| Turn Bay Length (ft)    |       |       |      |       |       |       |      |       |       |      |      |       |

# 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) 201 R Existing Black Rock Turnpike

## Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | NET                                                                               | NER                                                                               | NER2                                                                              | SWL2                                                                              | SWL                                                                               | SWT                                                                               | SWR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |                                                                                   |
| Traffic Volume (vph)    | 3                                                                                 | 1                                                                                 | 5                                                                                 | 3                                                                                 | 8                                                                                 | 1                                                                                 | 6                                                                                 |
| Future Volume (vph)     | 3                                                                                 | 1                                                                                 | 5                                                                                 | 3                                                                                 | 8                                                                                 | 1                                                                                 | 6                                                                                 |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 15                                                                                | 12                                                                                | 12                                                                                |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.944                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.953                                                                             |                                                                                   |
| Flt Protected           | 0.983                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.970                                                                             |                                                                                   |
| Satd. Flow (prot)       | 1729                                                                              | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1722                                                                              | 0                                                                                 |
| Flt Permitted           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1758                                                                              | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1775                                                                              | 0                                                                                 |
| Right Turn on Red       |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   |                                                                                   | No                                                                                |
| Satd. Flow (RTOR)       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |
| Link Distance (ft)      | 653                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 695                                                                               |                                                                                   |
| Travel Time (s)         | 17.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 19.0                                                                              |                                                                                   |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              |
| Adj. Flow (vph)         | 4                                                                                 | 1                                                                                 | 6                                                                                 | 4                                                                                 | 10                                                                                | 1                                                                                 | 8                                                                                 |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 17                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 23                                                                                | 0                                                                                 |
| Turn Type               | NA                                                                                |                                                                                   |                                                                                   |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   |
| Protected Phases        | 5                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 5                                                                                 |                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   |
| Detector Phase          | 5                                                                                 |                                                                                   |                                                                                   |                                                                                   | 5                                                                                 | 5                                                                                 |                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)     | 5.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   |
| Minimum Split (s)       | 12.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 12.6                                                                              | 12.6                                                                              |                                                                                   |
| Total Split (s)         | 19.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 19.6                                                                              | 19.6                                                                              |                                                                                   |
| Total Split (%)         | 22.1%                                                                             |                                                                                   |                                                                                   |                                                                                   | 22.1%                                                                             | 22.1%                                                                             |                                                                                   |
| Yellow Time (s)         | 3.3                                                                               |                                                                                   |                                                                                   |                                                                                   | 3.3                                                                               | 3.3                                                                               |                                                                                   |
| All-Red Time (s)        | 4.3                                                                               |                                                                                   |                                                                                   |                                                                                   | 4.3                                                                               | 4.3                                                                               |                                                                                   |
| Lost Time Adjust (s)    | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |
| Total Lost Time (s)     | 7.6                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Recall Mode             | None                                                                              |                                                                                   |                                                                                   |                                                                                   | None                                                                              | None                                                                              |                                                                                   |
| Act Effect Green (s)    | 5.8                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 5.8                                                                               |                                                                                   |
| Actuated g/C Ratio      | 0.11                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.11                                                                              |                                                                                   |
| v/c Ratio               | 0.09                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.11                                                                              |                                                                                   |
| Control Delay           | 28.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 28.4                                                                              |                                                                                   |
| Queue Delay             | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |
| Total Delay             | 28.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 28.4                                                                              |                                                                                   |
| LOS                     | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |
| Approach Delay          | 28.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 28.4                                                                              |                                                                                   |
| Approach LOS            | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |
| Queue Length 50th (ft)  | 4                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 5                                                                                 |                                                                                   |
| Queue Length 95th (ft)  | 22                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 27                                                                                |                                                                                   |
| Internal Link Dist (ft) | 573                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 615                                                                               |                                                                                   |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)

2017 Existing Conditions

Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                                                                                                                                                   |  |  |  |     |  |  |  |  |     |  |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                                                                                                                                        | EBT                                                                               | EBR                                                                               | EBR2                                                                              | WBL2                                                                                 | WBL                                                                               | WBT                                                                               | WBR                                                                                | NWL2                                                                                | NWL                                                                                    | NWR                                                                                 | NWR2                                                                                | NEL                                                                                 |
| Base Capacity (vph)                                                                                                                               | 1097                                                                              | 1506                                                                              |                                                                                   |                                                                                      |                                                                                   | 1507                                                                              |                                                                                    |                                                                                     | 1858                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Starvation Cap Reductn                                                                                                                            | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                      |                                                                                   | 0                                                                                 |                                                                                    |                                                                                     | 0                                                                                      |                                                                                     |                                                                                     |                                                                                     |
| Spillback Cap Reductn                                                                                                                             | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                      |                                                                                   | 0                                                                                 |                                                                                    |                                                                                     | 0                                                                                      |                                                                                     |                                                                                     |                                                                                     |
| Storage Cap Reductn                                                                                                                               | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                      |                                                                                   | 0                                                                                 |                                                                                    |                                                                                     | 0                                                                                      |                                                                                     |                                                                                     |                                                                                     |
| Reduced v/c Ratio                                                                                                                                 | 0.40                                                                              | 0.37                                                                              |                                                                                   |                                                                                      |                                                                                   | 0.37                                                                              |                                                                                    |                                                                                     | 0.27                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary                                                                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                      |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                        |                                                                                     |                                                                                     |                                                                                     |
| Area Type:                                                                                                                                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                      |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                        |                                                                                     |                                                                                     |                                                                                     |
| Cycle Length: 88.8                                                                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                      |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                        |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length: 51.2                                                                                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                      |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                        |                                                                                     |                                                                                     |                                                                                     |
| Natural Cycle: 60                                                                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                      |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                        |                                                                                     |                                                                                     |                                                                                     |
| Control Type: Actuated-Uncoordinated                                                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                      |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                        |                                                                                     |                                                                                     |                                                                                     |
| Maximum v/c Ratio: 0.61                                                                                                                           |                                                                                   |                                                                                   |                                                                                   |                                                                                      |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                        |                                                                                     |                                                                                     |                                                                                     |
| Intersection Signal Delay: 13.9                                                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                      |                                                                                   | Intersection LOS: B                                                               |                                                                                    |                                                                                     |                                                                                        |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization 78.6%                                                                                                           |                                                                                   |                                                                                   |                                                                                   |                                                                                      |                                                                                   | ICU Level of Service D                                                            |                                                                                    |                                                                                     |                                                                                        |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min) 15                                                                                                                          |                                                                                   |                                                                                   |                                                                                   |                                                                                      |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                        |                                                                                     |                                                                                     |                                                                                     |
| Splits and Phases: 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)/Route 58 (Tunxis Hill Cut |                                                                                   |                                                                                   |                                                                                   |                                                                                      |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                        |                                                                                     |                                                                                     |                                                                                     |
|  Ø2                                                              |                                                                                   |                                                                                   |                                                                                   |  Ø4 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |  Ø5 |                                                                                     |                                                                                     |                                                                                     |
| 35.8 s                                                                                                                                            |                                                                                   |                                                                                   |                                                                                   | 33.4 s                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 19.6 s                                                                                 |                                                                                     |                                                                                     |                                                                                     |

|                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|                        |  |  |  |  |  |  |  |
| Lane Group             | NET                                                                               | NER                                                                               | NER2                                                                              | SWL2                                                                              | SWL                                                                               | SWT                                                                               | SWR                                                                                |
| Base Capacity (vph)    | 443                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 447                                                                               |                                                                                    |
| Starvation Cap Reductn | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                    |
| Spillback Cap Reductn  | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                    |
| Storage Cap Reductn    | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                    |
| Reduced v/c Ratio      | 0.04                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.05                                                                              |                                                                                    |
| Intersection Summary   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |



201: Tunxis Hill Road & Route 58 (Tunxis Hill Cutoff)  
Lanes, Volumes, Timings

2017 Existing Conditions  
Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |  |
| Traffic Volume (vph)    | 459                                                                               | 10                                                                                | 39                                                                                | 490                                                                               | 5                                                                                 | 54                                                                                |
| Future Volume (vph)     | 459                                                                               | 10                                                                                | 39                                                                                | 490                                                                               | 5                                                                                 | 54                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 10                                                                                | 10                                                                                |
| Storage Length (ft)     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 50                                                                                |
| Storage Lanes           |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |
| Taper Length (ft)       |                                                                                   |                                                                                   | 25                                                                                |                                                                                   | 25                                                                                |                                                                                   |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.997                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |
| Flt Protected           |                                                                                   |                                                                                   |                                                                                   | 0.996                                                                             | 0.950                                                                             |                                                                                   |
| Satd. Flow (prot)       | 3411                                                                              | 0                                                                                 | 0                                                                                 | 1793                                                                              | 1652                                                                              | 1478                                                                              |
| Flt Permitted           |                                                                                   |                                                                                   |                                                                                   | 0.996                                                                             | 0.950                                                                             |                                                                                   |
| Satd. Flow (perm)       | 3411                                                                              | 0                                                                                 | 0                                                                                 | 1793                                                                              | 1652                                                                              | 1478                                                                              |
| Link Speed (mph)        | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                | 25                                                                                |                                                                                   |
| Link Distance (ft)      | 1095                                                                              |                                                                                   |                                                                                   | 214                                                                               | 782                                                                               |                                                                                   |
| Travel Time (s)         | 24.9                                                                              |                                                                                   |                                                                                   | 4.9                                                                               | 21.3                                                                              |                                                                                   |
| Peak Hour Factor        | 0.88                                                                              | 0.88                                                                              | 0.90                                                                              | 0.90                                                                              | 0.80                                                                              | 0.80                                                                              |
| Adj. Flow (vph)         | 522                                                                               | 11                                                                                | 43                                                                                | 544                                                                               | 6                                                                                 | 68                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 533                                                                               | 0                                                                                 | 0                                                                                 | 587                                                                               | 6                                                                                 | 68                                                                                |
| Sign Control            | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 54.3% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↑↑   |      |      | ↑    | ↑    | ↑    |
| Traffic Vol, veh/h       | 459  | 10   | 39   | 490  | 5    | 54   |
| Future Vol, veh/h        | 459  | 10   | 39   | 490  | 5    | 54   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | 0    | 50   |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 88   | 88   | 90   | 90   | 80   | 80   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 522  | 11   | 43   | 544  | 6    | 68   |

| Major/Minor          | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0      | 0      | 533    |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Critical Hdwy        | -      | -      | 4.13   |
| Critical Hdwy Stg 1  | -      | -      | -      |
| Critical Hdwy Stg 2  | -      | -      | -      |
| Follow-up Hdwy       | -      | -      | 2.219  |
| Pot Cap-1 Maneuver   | -      | -      | 1033   |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | -      | -      | 1033   |
| Mov Cap-2 Maneuver   | -      | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |

| Approach             | EB | WB  | NB   |
|----------------------|----|-----|------|
| HCM Control Delay, s | 0  | 0.6 | 11.6 |
| HCM LOS              |    |     | B    |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | 191   | 733   | -   | -   | 1033  | -   |
| HCM Lane V/C Ratio    | 0.033 | 0.092 | -   | -   | 0.042 | -   |
| HCM Control Delay (s) | 24.5  | 10.4  | -   | -   | 8.6   | 0   |
| HCM Lane LOS          | C     | B     | -   | -   | A     | A   |
| HCM 95th %tile Q(veh) | 0.1   | 0.3   | -   | -   | 0.1   | -   |

202: Route 732 (Black Rock Turnpike) & Judd Street  
Lanes, Volumes, Timings

2017 Existing Conditions  
Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (vph)    | 21                                                                                | 70                                                                                | 46                                                                                | 467                                                                               | 566                                                                               | 32                                                                                |
| Future Volume (vph)     | 21                                                                                | 70                                                                                | 46                                                                                | 467                                                                               | 566                                                                               | 32                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Storage Length (ft)     | 0                                                                                 | 0                                                                                 | 25                                                                                |                                                                                   |                                                                                   | 0                                                                                 |
| Storage Lanes           | 1                                                                                 | 0                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 25                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.896                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.993                                                                             |                                                                                   |
| Flt Protected           | 0.989                                                                             |                                                                                   |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1871                                                                              | 0                                                                                 | 0                                                                                 | 3525                                                                              | 1850                                                                              | 0                                                                                 |
| Flt Permitted           | 0.989                                                                             |                                                                                   |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1871                                                                              | 0                                                                                 | 0                                                                                 | 3525                                                                              | 1850                                                                              | 0                                                                                 |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 586                                                                               |                                                                                   |                                                                                   | 395                                                                               | 218                                                                               |                                                                                   |
| Travel Time (s)         | 16.0                                                                              |                                                                                   |                                                                                   | 9.0                                                                               | 5.0                                                                               |                                                                                   |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.98                                                                              | 0.98                                                                              | 0.93                                                                              | 0.93                                                                              |
| Adj. Flow (vph)         | 26                                                                                | 88                                                                                | 47                                                                                | 477                                                                               | 609                                                                               | 34                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 114                                                                               | 0                                                                                 | 0                                                                                 | 524                                                                               | 643                                                                               | 0                                                                                 |
| Sign Control            | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 60.7% ICU Level of Service B

Analysis Period (min) 15

Intersection

Int Delay, s/veh 2

| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↔    |      |      | ↕    | ↕    |      |
| Traffic Vol, veh/h       | 21   | 70   | 46   | 467  | 566  | 32   |
| Future Vol, veh/h        | 21   | 70   | 46   | 467  | 566  | 32   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 0    | -    | 25   | -    | -    | -    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 80   | 80   | 98   | 98   | 93   | 93   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 26   | 88   | 47   | 477  | 609  | 34   |

| Major/Minor          | Minor2 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 958    | 626    | 643    |
| Stage 1              | 626    | -      | -      |
| Stage 2              | 332    | -      | -      |
| Critical Hdwy        | 6.63   | 6.23   | 4.13   |
| Critical Hdwy Stg 1  | 5.43   | -      | -      |
| Critical Hdwy Stg 2  | 5.83   | -      | -      |
| Follow-up Hdwy       | 3.519  | 3.319  | 2.219  |
| Pot Cap-1 Maneuver   | 270    | 483    | 940    |
| Stage 1              | 532    | -      | -      |
| Stage 2              | 700    | -      | -      |
| Platoon blocked, %   |        |        |        |
| Mov Cap-1 Maneuver   | 252    | 483    | 940    |
| Mov Cap-2 Maneuver   | 252    | -      | -      |
| Stage 1              | 532    | -      | -      |
| Stage 2              | 652    | -      | -      |

| Approach             | EB   | NB  | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 17.6 | 1.1 | 0  |
| HCM LOS              | C    |     |    |

| Minor Lane/Major Mvmt | NBL  | NBT | EBLn1 | SBT | SBR |
|-----------------------|------|-----|-------|-----|-----|
| Capacity (veh/h)      | 940  | -   | 399   | -   | -   |
| HCM Lane V/C Ratio    | 0.05 | -   | 0.285 | -   | -   |
| HCM Control Delay (s) | 9    | 0.3 | 17.6  | -   | -   |
| HCM Lane LOS          | A    | A   | C     | -   | -   |
| HCM 95th %tile Q(veh) | 0.2  | -   | 1.2   | -   | -   |



# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/2040 Background Conditions

## Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 11                                                                                | 1                                                                                 | 3                                                                                 | 204                                                                               | 0                                                                                 | 167                                                                               | 2                                                                                  | 680                                                                                 | 26                                                                                  | 65                                                                                  | 643                                                                                 | 4                                                                                   |
| Future Volume (vph)     | 11                                                                                | 1                                                                                 | 3                                                                                 | 204                                                                               | 0                                                                                 | 167                                                                               | 2                                                                                  | 680                                                                                 | 26                                                                                  | 65                                                                                  | 643                                                                                 | 4                                                                                   |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                 | 13                                                                                  | 12                                                                                  | 12                                                                                  | 13                                                                                  | 12                                                                                  |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.972                                                                             |                                                                                   |                                                                                   | 0.939                                                                             |                                                                                   |                                                                                    | 0.995                                                                               |                                                                                     |                                                                                     | 0.999                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.964                                                                             |                                                                                   |                                                                                   | 0.973                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.995                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 1959                                                                              | 0                                                                                 | 0                                                                                 | 1910                                                                              | 0                                                                                 | 0                                                                                  | 1897                                                                                | 0                                                                                   | 0                                                                                   | 1895                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.776                                                                             |                                                                                   |                                                                                   | 0.818                                                                             |                                                                                   |                                                                                    | 0.998                                                                               |                                                                                     |                                                                                     | 0.892                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 1577                                                                              | 0                                                                                 | 0                                                                                 | 1606                                                                              | 0                                                                                 | 0                                                                                  | 1893                                                                                | 0                                                                                   | 0                                                                                   | 1699                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 55                                                                                |                                                                                   |                                                                                    | 6                                                                                   |                                                                                     |                                                                                     | 1                                                                                   |                                                                                     |
| Link Speed (mph)        |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 35                                                                                  |                                                                                     |                                                                                     | 35                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 378                                                                               |                                                                                   |                                                                                   | 442                                                                               |                                                                                   |                                                                                    | 1898                                                                                |                                                                                     |                                                                                     | 522                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 10.3                                                                              |                                                                                   |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                    | 37.0                                                                                |                                                                                     |                                                                                     | 10.2                                                                                |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.84                                                                              | 0.84                                                                              | 0.84                                                                              | 0.94                                                                               | 0.94                                                                                | 0.94                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Heavy Vehicles (%)      | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                 | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  |
| Adj. Flow (vph)         | 14                                                                                | 1                                                                                 | 4                                                                                 | 243                                                                               | 0                                                                                 | 199                                                                               | 2                                                                                  | 723                                                                                 | 28                                                                                  | 71                                                                                  | 707                                                                                 | 4                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 19                                                                                | 0                                                                                 | 0                                                                                 | 442                                                                               | 0                                                                                 | 0                                                                                  | 753                                                                                 | 0                                                                                   | 0                                                                                   | 782                                                                                 | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                    | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Permitted Phases        | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   | 2                                                                                  |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 4                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |                                                                                   | 2                                                                                  | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 15.0                                                                               | 15.0                                                                                |                                                                                     | 15.0                                                                                | 15.0                                                                                |                                                                                     |
| Minimum Split (s)       | 11.7                                                                              | 11.7                                                                              |                                                                                   | 11.7                                                                              | 11.7                                                                              |                                                                                   | 20.6                                                                               | 20.6                                                                                |                                                                                     | 20.6                                                                                | 20.6                                                                                |                                                                                     |
| Total Split (s)         | 17.7                                                                              | 17.7                                                                              |                                                                                   | 17.7                                                                              | 17.7                                                                              |                                                                                   | 48.6                                                                               | 48.6                                                                                |                                                                                     | 48.6                                                                                | 48.6                                                                                |                                                                                     |
| Total Split (%)         | 26.7%                                                                             | 26.7%                                                                             |                                                                                   | 26.7%                                                                             | 26.7%                                                                             |                                                                                   | 73.3%                                                                              | 73.3%                                                                               |                                                                                     | 73.3%                                                                               | 73.3%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.3                                                                               | 3.3                                                                               |                                                                                   | 3.3                                                                               | 3.3                                                                               |                                                                                   | 4.0                                                                                | 4.0                                                                                 |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.4                                                                               | 1.4                                                                               |                                                                                   | 1.4                                                                               | 1.4                                                                               |                                                                                   | 1.6                                                                                | 1.6                                                                                 |                                                                                     | 1.6                                                                                 | 1.6                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                    | 5.6                                                                                 |                                                                                     |                                                                                     | 5.6                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              |                                                                                   | Min                                                                                | Min                                                                                 |                                                                                     | Min                                                                                 | Min                                                                                 |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 13.5                                                                              |                                                                                   |                                                                                   | 13.5                                                                              |                                                                                   |                                                                                    | 28.2                                                                                |                                                                                     |                                                                                     | 28.2                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.26                                                                              |                                                                                   |                                                                                   | 0.26                                                                              |                                                                                   |                                                                                    | 0.54                                                                                |                                                                                     |                                                                                     | 0.54                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.05                                                                              |                                                                                   |                                                                                   | 0.97                                                                              |                                                                                   |                                                                                    | 0.74                                                                                |                                                                                     |                                                                                     | 0.85                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 17.9                                                                              |                                                                                   |                                                                                   | 61.1                                                                              |                                                                                   |                                                                                    | 13.4                                                                                |                                                                                     |                                                                                     | 19.9                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 17.9                                                                              |                                                                                   |                                                                                   | 61.1                                                                              |                                                                                   |                                                                                    | 13.4                                                                                |                                                                                     |                                                                                     | 19.9                                                                                |                                                                                     |
| LOS                     |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                    | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 17.9                                                                              |                                                                                   |                                                                                   | 61.1                                                                              |                                                                                   |                                                                                    | 13.4                                                                                |                                                                                     |                                                                                     | 19.9                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                    | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 119                                                                               |                                                                                   |                                                                                    | 149                                                                                 |                                                                                     |                                                                                     | 174                                                                                 |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 18                                                                                |                                                                                   |                                                                                   | #337                                                                              |                                                                                   |                                                                                    | 241                                                                                 |                                                                                     |                                                                                     | 299                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 298                                                                               |                                                                                   |                                                                                   | 362                                                                               |                                                                                   |                                                                                    | 1818                                                                                |                                                                                     |                                                                                     | 442                                                                                 |                                                                                     |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive Background Conditions Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Turn Bay Length (ft)   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)    |                                                                                   | 409                                                                               |                                                                                   |                                                                                   | 454                                                                               |                                                                                   |                                                                                    | 1573                                                                                |                                                                                     |                                                                                     | 1411                                                                                |                                                                                     |
| Starvation Cap Reductn |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   | 0.05                                                                              |                                                                                   |                                                                                   | 0.97                                                                              |                                                                                   |                                                                                    | 0.48                                                                                |                                                                                     |                                                                                     | 0.55                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 66.3

Actuated Cycle Length: 52.3

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 26.6

Intersection LOS: C

Intersection Capacity Utilization 110.9%

ICU Level of Service H

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

|                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø2   |  Ø4   |
| 48.6 s                                                                                 | 17.7 s                                                                                   |
|  Ø6 |  Ø8 |
| 48.6 s                                                                                 | 17.7 s                                                                                   |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

## Lanes, Volumes, Timings

2040 Background Conditions

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |      |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3   |
| Lane Configurations     |  |  |  |  |  |  |      |
| Traffic Volume (vph)    | 54                                                                                | 136                                                                               | 366                                                                               | 739                                                                               | 622                                                                               | 198                                                                               |      |
| Future Volume (vph)     | 54                                                                                | 136                                                                               | 366                                                                               | 739                                                                               | 622                                                                               | 198                                                                               |      |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |      |
| Lane Width (ft)         | 10                                                                                | 10                                                                                | 11                                                                                | 11                                                                                | 12                                                                                | 12                                                                                |      |
| Storage Length (ft)     | 0                                                                                 | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   | 0                                                                                 |      |
| Storage Lanes           | 1                                                                                 | 1                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |      |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              |      |
| Frt                     |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.964                                                                             |                                                                                   |      |
| Flt Protected           | 0.950                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |      |
| Satd. Flow (prot)       | 1636                                                                              | 1463                                                                              | 1694                                                                              | 1783                                                                              | 3379                                                                              | 0                                                                                 |      |
| Flt Permitted           | 0.950                                                                             |                                                                                   | 0.162                                                                             |                                                                                   |                                                                                   |                                                                                   |      |
| Satd. Flow (perm)       | 1636                                                                              | 1463                                                                              | 289                                                                               | 1783                                                                              | 3379                                                                              | 0                                                                                 |      |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |      |
| Satd. Flow (RTOR)       |                                                                                   | 164                                                                               |                                                                                   |                                                                                   | 51                                                                                |                                                                                   |      |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 35                                                                                |                                                                                   |      |
| Link Distance (ft)      | 445                                                                               |                                                                                   |                                                                                   | 510                                                                               | 341                                                                               |                                                                                   |      |
| Travel Time (s)         | 12.1                                                                              |                                                                                   |                                                                                   | 11.6                                                                              | 6.6                                                                               |                                                                                   |      |
| Peak Hour Factor        | 0.83                                                                              | 0.83                                                                              | 0.91                                                                              | 0.91                                                                              | 0.94                                                                              | 0.94                                                                              |      |
| Heavy Vehicles (%)      | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                |      |
| Adj. Flow (vph)         | 65                                                                                | 164                                                                               | 402                                                                               | 812                                                                               | 662                                                                               | 211                                                                               |      |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Group Flow (vph)   | 65                                                                                | 164                                                                               | 402                                                                               | 812                                                                               | 873                                                                               | 0                                                                                 |      |
| Turn Type               | Prot                                                                              | Perm                                                                              | pm+pt                                                                             | NA                                                                                | NA                                                                                |                                                                                   |      |
| Protected Phases        | 4                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 | 2                                                                                 |                                                                                   | 3    |
| Permitted Phases        |                                                                                   | 4                                                                                 | 6                                                                                 |                                                                                   |                                                                                   |                                                                                   |      |
| Detector Phase          | 4                                                                                 | 4                                                                                 | 1                                                                                 | 6                                                                                 | 2                                                                                 |                                                                                   |      |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               | 5.0                                                                               | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0  |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              | 9.2                                                                               | 21.9                                                                              | 21.9                                                                              |                                                                                   | 22.0 |
| Total Split (s)         | 21.9                                                                              | 21.9                                                                              | 9.2                                                                               | 31.1                                                                              | 21.9                                                                              |                                                                                   | 22.0 |
| Total Split (%)         | 29.2%                                                                             | 29.2%                                                                             | 12.3%                                                                             | 41.5%                                                                             | 29.2%                                                                             |                                                                                   | 29%  |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               | 3.2                                                                               | 4.9                                                                               | 4.9                                                                               |                                                                                   | 4.0  |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 2.0                                                                               | 2.0                                                                               |                                                                                   | 0.0  |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               | 4.2                                                                               | 6.9                                                                               | 6.9                                                                               |                                                                                   |      |
| Lead/Lag                | Lag                                                                               | Lag                                                                               | Lead                                                                              |                                                                                   | Lag                                                                               |                                                                                   | Lead |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               |                                                                                   | Yes  |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                             | C-Max                                                                             |                                                                                   | None |
| Act Effect Green (s)    | 9.4                                                                               | 9.4                                                                               | 57.4                                                                              | 54.7                                                                              | 24.7                                                                              |                                                                                   |      |
| Actuated g/C Ratio      | 0.13                                                                              | 0.13                                                                              | 0.77                                                                              | 0.73                                                                              | 0.33                                                                              |                                                                                   |      |
| v/c Ratio               | 0.32                                                                              | 0.50                                                                              | 0.57                                                                              | 0.62                                                                              | 0.76                                                                              |                                                                                   |      |
| Control Delay           | 34.2                                                                              | 11.3                                                                              | 10.5                                                                              | 14.7                                                                              | 25.3                                                                              |                                                                                   |      |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Total Delay             | 34.2                                                                              | 11.3                                                                              | 10.5                                                                              | 14.7                                                                              | 25.3                                                                              |                                                                                   |      |
| LOS                     | C                                                                                 | B                                                                                 | B                                                                                 | B                                                                                 | C                                                                                 |                                                                                   |      |
| Approach Delay          | 17.8                                                                              |                                                                                   |                                                                                   | 13.3                                                                              | 25.3                                                                              |                                                                                   |      |
| Approach LOS            | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 | C                                                                                 |                                                                                   |      |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive Lanes, Volumes, Timings

2040 Background Conditions  
Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |    |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3 |
| Queue Length 50th (ft)  | 28                                                                                | 0                                                                                 | 71                                                                                | 339                                                                               | 165                                                                               |                                                                                   |    |
| Queue Length 95th (ft)  | 57                                                                                | 40                                                                                | 171                                                                               | 503                                                                               | 218                                                                               |                                                                                   |    |
| Internal Link Dist (ft) | 365                                                                               |                                                                                   |                                                                                   | 430                                                                               | 261                                                                               |                                                                                   |    |
| Turn Bay Length (ft)    |                                                                                   | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   |                                                                                   |    |
| Base Capacity (vph)     | 390                                                                               | 474                                                                               | 704                                                                               | 1300                                                                              | 1146                                                                              |                                                                                   |    |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Reduced v/c Ratio       | 0.17                                                                              | 0.35                                                                              | 0.57                                                                              | 0.62                                                                              | 0.76                                                                              |                                                                                   |    |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 22 (29%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 18.3

Intersection LOS: B

Intersection Capacity Utilization 63.9%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

|                                                                                            |                                                                                            |                                                                                        |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø3 |  Ø4 |
| 9.2 s                                                                                      | 21.9 s                                                                                     | 22 s                                                                                   | 21.9 s                                                                                   |
|  Ø6 (R) |                                                                                            |                                                                                        |                                                                                          |
| 31.1 s                                                                                     |                                                                                            |                                                                                        |                                                                                          |



# 103: Route 58 (Black Rock Turnpike) & Brookside Drive Lanes, Volumes, Timings

2040 Background Conditions

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (vph)    | 61                                                                                | 15                                                                                | 59                                                                                | 1051                                                                              | 586                                                                               | 181                                                                               |
| Future Volume (vph)     | 61                                                                                | 15                                                                                | 59                                                                                | 1051                                                                              | 586                                                                               | 181                                                                               |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              |
| Frt                     | 0.973                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.965                                                                             |                                                                                   |
| Flt Protected           | 0.962                                                                             |                                                                                   |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1957                                                                              | 0                                                                                 | 0                                                                                 | 3494                                                                              | 3382                                                                              | 0                                                                                 |
| Flt Permitted           | 0.962                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1957                                                                              | 0                                                                                 | 0                                                                                 | 2979                                                                              | 3382                                                                              | 0                                                                                 |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |
| Satd. Flow (RTOR)       | 17                                                                                |                                                                                   |                                                                                   |                                                                                   | 66                                                                                |                                                                                   |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 347                                                                               |                                                                                   |                                                                                   | 293                                                                               | 336                                                                               |                                                                                   |
| Travel Time (s)         | 9.5                                                                               |                                                                                   |                                                                                   | 6.7                                                                               | 7.6                                                                               |                                                                                   |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.90                                                                              | 0.90                                                                              | 0.88                                                                              | 0.88                                                                              |
| Heavy Vehicles (%)      | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                |
| Adj. Flow (vph)         | 76                                                                                | 19                                                                                | 66                                                                                | 1168                                                                              | 666                                                                               | 206                                                                               |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 95                                                                                | 0                                                                                 | 0                                                                                 | 1234                                                                              | 872                                                                               | 0                                                                                 |
| Turn Type               | Prot                                                                              |                                                                                   | pm+pt                                                                             | NA                                                                                | NA                                                                                |                                                                                   |
| Protected Phases        | 4                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                 | 6                                                                                 |                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Detector Phase          | 4                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                 | 6                                                                                 |                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)     | 9.0                                                                               |                                                                                   | 3.0                                                                               | 15.0                                                                              | 15.0                                                                              |                                                                                   |
| Minimum Split (s)       | 13.0                                                                              |                                                                                   | 8.9                                                                               | 20.4                                                                              | 20.4                                                                              |                                                                                   |
| Total Split (s)         | 25.0                                                                              |                                                                                   | 14.0                                                                              | 50.0                                                                              | 36.0                                                                              |                                                                                   |
| Total Split (%)         | 33.3%                                                                             |                                                                                   | 18.7%                                                                             | 66.7%                                                                             | 48.0%                                                                             |                                                                                   |
| Yellow Time (s)         | 3.0                                                                               |                                                                                   | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               |                                                                                   |
| All-Red Time (s)        | 1.0                                                                               |                                                                                   | 1.7                                                                               | 1.2                                                                               | 1.2                                                                               |                                                                                   |
| Lost Time Adjust (s)    | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |
| Total Lost Time (s)     | 4.0                                                                               |                                                                                   |                                                                                   | 5.4                                                                               | 5.4                                                                               |                                                                                   |
| Lead/Lag                |                                                                                   |                                                                                   | Lag                                                                               |                                                                                   | Lead                                                                              |                                                                                   |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   | Yes                                                                               |                                                                                   |
| Recall Mode             | None                                                                              |                                                                                   | None                                                                              | C-Max                                                                             | C-Max                                                                             |                                                                                   |
| Act Effect Green (s)    | 9.4                                                                               |                                                                                   |                                                                                   | 59.9                                                                              | 59.9                                                                              |                                                                                   |
| Actuated g/C Ratio      | 0.13                                                                              |                                                                                   |                                                                                   | 0.80                                                                              | 0.80                                                                              |                                                                                   |
| v/c Ratio               | 0.37                                                                              |                                                                                   |                                                                                   | 0.52                                                                              | 0.32                                                                              |                                                                                   |
| Control Delay           | 29.4                                                                              |                                                                                   |                                                                                   | 2.6                                                                               | 0.6                                                                               |                                                                                   |
| Queue Delay             | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |
| Total Delay             | 29.4                                                                              |                                                                                   |                                                                                   | 2.6                                                                               | 0.6                                                                               |                                                                                   |
| LOS                     | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |
| Approach Delay          | 29.4                                                                              |                                                                                   |                                                                                   | 2.6                                                                               | 0.6                                                                               |                                                                                   |
| Approach LOS            | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |
| Queue Length 50th (ft)  | 34                                                                                |                                                                                   |                                                                                   | 34                                                                                | 8                                                                                 |                                                                                   |
| Queue Length 95th (ft)  | 65                                                                                |                                                                                   |                                                                                   | m66                                                                               | 7                                                                                 |                                                                                   |
| Internal Link Dist (ft) | 267                                                                               |                                                                                   |                                                                                   | 213                                                                               | 256                                                                               |                                                                                   |

# 103: Route 58 (Black Rock Turnpike) & Brookside Drive Lanes, Volumes, Timings

2040 Background Conditions  
Timing Plan: Weekday AM Peak

|                        |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Turn Bay Length (ft)   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Base Capacity (vph)    | 560                                                                               |                                                                                   | 2380                                                                              |                                                                                   | 2715                                                                              |                                                                                   |
| Starvation Cap Reductn | 0                                                                                 |                                                                                   | 119                                                                               |                                                                                   | 0                                                                                 |                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   |
| Storage Cap Reductn    | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   |
| Reduced v/c Ratio      | 0.17                                                                              |                                                                                   | 0.55                                                                              |                                                                                   | 0.32                                                                              |                                                                                   |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 45 (60%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.52

Intersection Signal Delay: 3.0

Intersection LOS: A

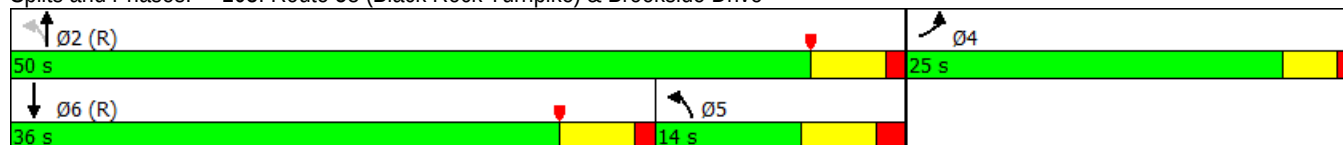
Intersection Capacity Utilization 72.6%

ICU Level of Service C

Analysis Period (min) 15

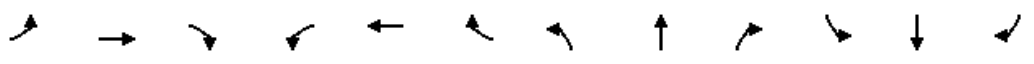
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive



# 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairview Road Conditions Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |       |       |       |       |       |       |       |      |       |       |      |
|-------------------------|------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|------|
| Lane Group              | EBL                                                                                | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
| Lane Configurations     |                                                                                    |       |       |       |       |       |       |       |      |       |       |      |
| Traffic Volume (vph)    | 5                                                                                  | 0     | 1     | 50    | 0     | 340   | 8     | 783   | 25   | 84    | 533   | 3    |
| Future Volume (vph)     | 5                                                                                  | 0     | 1     | 50    | 0     | 340   | 8     | 783   | 25   | 84    | 533   | 3    |
| Ideal Flow (vphpl)      | 1900                                                                               | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12                                                                                 | 12    | 12    | 12    | 12    | 11    | 12    | 11    | 12   | 12    | 11    | 12   |
| Storage Length (ft)     | 0                                                                                  |       | 0     | 0     |       | 75    | 0     |       | 0    | 0     |       | 0    |
| Storage Lanes           | 0                                                                                  |       | 1     | 0     |       | 1     | 0     |       | 0    | 0     |       | 0    |
| Taper Length (ft)       | 25                                                                                 |       |       | 25    |       |       | 25    |       |      | 25    |       |      |
| Lane Util. Factor       | 1.00                                                                               | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 0.95  | 0.95  | 0.95 | 0.95  | 0.95  | 0.95 |
| Frt                     |                                                                                    |       | 0.850 |       |       | 0.850 |       | 0.995 |      |       | 0.999 |      |
| Flt Protected           |                                                                                    | 0.950 |       |       | 0.950 |       |       |       |      |       | 0.993 |      |
| Satd. Flow (prot)       | 0                                                                                  | 1752  | 1568  | 0     | 1752  | 1516  | 0     | 3371  | 0    | 0     | 3361  | 0    |
| Flt Permitted           |                                                                                    | 0.720 |       |       | 0.754 |       |       | 0.949 |      |       | 0.724 |      |
| Satd. Flow (perm)       | 0                                                                                  | 1328  | 1568  | 0     | 1391  | 1516  | 0     | 3199  | 0    | 0     | 2450  | 0    |
| Right Turn on Red       |                                                                                    |       | Yes   |       |       | No    |       |       | Yes  |       |       | Yes  |
| Satd. Flow (RTOR)       |                                                                                    |       | 128   |       |       |       |       | 5     |      |       | 1     |      |
| Link Speed (mph)        |                                                                                    | 30    |       |       | 25    |       |       | 30    |      |       | 30    |      |
| Link Distance (ft)      |                                                                                    | 87    |       |       | 499   |       |       | 713   |      |       | 293   |      |
| Travel Time (s)         |                                                                                    | 2.0   |       |       | 13.6  |       |       | 16.2  |      |       | 6.7   |      |
| Peak Hour Factor        | 0.80                                                                               | 0.80  | 0.80  | 0.90  | 0.90  | 0.90  | 0.88  | 0.88  | 0.88 | 0.92  | 0.92  | 0.92 |
| Heavy Vehicles (%)      | 3%                                                                                 | 3%    | 3%    | 3%    | 3%    | 3%    | 3%    | 3%    | 3%   | 3%    | 3%    | 3%   |
| Adj. Flow (vph)         | 6                                                                                  | 0     | 1     | 56    | 0     | 378   | 9     | 890   | 28   | 91    | 579   | 3    |
| Shared Lane Traffic (%) |                                                                                    |       |       |       |       |       |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 0                                                                                  | 6     | 1     | 0     | 56    | 378   | 0     | 927   | 0    | 0     | 673   | 0    |
| Turn Type               | Perm                                                                               | NA    | Perm  | Perm  | NA    | Perm  | Perm  | NA    |      | pm+pt | NA    |      |
| Protected Phases        |                                                                                    | 4     |       |       | 8     |       |       | 2     |      | 1     | 6     |      |
| Permitted Phases        | 4                                                                                  |       | 4     | 8     |       | 8     | 2     |       |      | 6     |       |      |
| Detector Phase          | 4                                                                                  | 4     | 4     | 8     | 8     | 8     | 2     | 2     |      | 1     | 6     |      |
| Switch Phase            |                                                                                    |       |       |       |       |       |       |       |      |       |       |      |
| Minimum Initial (s)     | 9.0                                                                                | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 15.0  | 15.0  |      | 3.0   | 15.0  |      |
| Minimum Split (s)       | 13.0                                                                               | 13.0  | 13.0  | 13.0  | 13.0  | 13.0  | 20.3  | 20.3  |      | 9.5   | 20.3  |      |
| Total Split (s)         | 25.0                                                                               | 25.0  | 25.0  | 25.0  | 25.0  | 25.0  | 36.0  | 36.0  |      | 14.0  | 50.0  |      |
| Total Split (%)         | 33.3%                                                                              | 33.3% | 33.3% | 33.3% | 33.3% | 33.3% | 48.0% | 48.0% |      | 18.7% | 66.7% |      |
| Yellow Time (s)         | 3.0                                                                                | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 4.3   | 4.3   |      | 4.3   | 4.3   |      |
| All-Red Time (s)        | 1.0                                                                                | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |      | 2.2   | 1.0   |      |
| Lost Time Adjust (s)    |                                                                                    | 0.0   | 0.0   |       | 0.0   | 0.0   |       | 0.0   |      |       | 0.0   |      |
| Total Lost Time (s)     |                                                                                    | 4.0   | 4.0   |       | 4.0   | 4.0   |       | 5.3   |      |       | 5.3   |      |
| Lead/Lag                |                                                                                    |       |       |       |       |       | Lead  | Lead  |      | Lag   |       |      |
| Lead-Lag Optimize?      |                                                                                    |       |       |       |       |       | Yes   | Yes   |      | Yes   |       |      |
| Recall Mode             | None                                                                               | None  | None  | None  | None  | None  | C-Max | C-Max |      | None  | C-Max |      |
| Act Effect Green (s)    |                                                                                    | 20.2  | 20.2  |       | 20.2  | 20.2  |       | 45.5  |      |       | 45.5  |      |
| Actuated g/C Ratio      |                                                                                    | 0.27  | 0.27  |       | 0.27  | 0.27  |       | 0.61  |      |       | 0.61  |      |
| v/c Ratio               |                                                                                    | 0.02  | 0.00  |       | 0.15  | 0.93  |       | 0.48  |      |       | 0.45  |      |
| Control Delay           |                                                                                    | 19.8  | 0.0   |       | 21.6  | 58.2  |       | 9.3   |      |       | 3.0   |      |
| Queue Delay             |                                                                                    | 0.0   | 0.0   |       | 0.0   | 0.0   |       | 0.0   |      |       | 0.2   |      |
| Total Delay             |                                                                                    | 19.8  | 0.0   |       | 21.6  | 58.2  |       | 9.3   |      |       | 3.2   |      |
| LOS                     |                                                                                    | B     | A     |       | C     | E     |       | A     |      |       | A     |      |
| Approach Delay          |                                                                                    | 17.0  |       |       | 53.5  |       |       | 9.3   |      |       | 3.2   |      |
| Approach LOS            |                                                                                    | B     |       |       | D     |       |       | A     |      |       | A     |      |

# 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road Conditions Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  |                                                                                   | 2                                                                                 | 0                                                                                 |                                                                                   | 19                                                                                | 168                                                                               |                                                                                    | 115                                                                                 |                                                                                     |                                                                                     | 22                                                                                  |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 9                                                                                 | 0                                                                                 |                                                                                   | 47                                                                                | #324                                                                              |                                                                                    | 152                                                                                 |                                                                                     |                                                                                     | 23                                                                                  |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 7                                                                                 |                                                                                   |                                                                                   | 419                                                                               |                                                                                   |                                                                                    | 633                                                                                 |                                                                                     |                                                                                     | 213                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 75                                                                                |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 371                                                                               | 531                                                                               |                                                                                   | 389                                                                               | 424                                                                               |                                                                                    | 1941                                                                                |                                                                                     |                                                                                     | 1485                                                                                |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 193                                                                                 |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.02                                                                              | 0.00                                                                              |                                                                                   | 0.14                                                                              | 0.89                                                                              |                                                                                    | 0.48                                                                                |                                                                                     |                                                                                     | 0.52                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 48 (64%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 16.7

Intersection LOS: B

Intersection Capacity Utilization 62.3%

ICU Level of Service B

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road

|                                                                                            |                                                                                          |                                                                                          |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø2 (R) |  Ø1   |  Ø4 |
| 36 s                                                                                       | 14 s                                                                                     | 25 s                                                                                     |
|  Ø6 (R) |  Ø8 |                                                                                          |
| 50 s                                                                                       |                                                                                          | 25 s                                                                                     |



# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Background Conditions

## Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |       |      |       |       |      |       |       |      |       |       |      |
|-------------------------|------------------------------------------------------------------------------------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|
| Lane Group              | EBL                                                                                | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
| Lane Configurations     |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Traffic Volume (vph)    | 48                                                                                 | 379   | 133  | 178   | 685   | 71   | 150   | 165   | 62   | 105   | 351   | 46   |
| Future Volume (vph)     | 48                                                                                 | 379   | 133  | 178   | 685   | 71   | 150   | 165   | 62   | 105   | 351   | 46   |
| Ideal Flow (vphpl)      | 1900                                                                               | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 11                                                                                 | 11    | 12   | 11    | 12    | 12   | 11    | 11    | 12   | 12    | 12    | 12   |
| Storage Length (ft)     | 200                                                                                |       | 0    | 175   |       | 0    | 210   |       | 0    | 170   |       | 0    |
| Storage Lanes           | 1                                                                                  |       | 0    | 1     |       | 0    | 1     |       | 0    | 1     |       | 0    |
| Taper Length (ft)       | 85                                                                                 |       |      | 75    |       |      | 100   |       |      | 100   |       |      |
| Lane Util. Factor       | 1.00                                                                               | 0.95  | 0.95 | 1.00  | 0.95  | 0.95 | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 |
| Frt                     |                                                                                    | 0.961 |      |       | 0.986 |      |       | 0.959 |      |       | 0.983 |      |
| Flt Protected           | 0.950                                                                              |       |      | 0.950 |       |      | 0.950 |       |      | 0.950 |       |      |
| Satd. Flow (prot)       | 1678                                                                               | 3225  | 0    | 1678  | 3423  | 0    | 1678  | 1694  | 0    | 1736  | 1796  | 0    |
| Flt Permitted           | 0.950                                                                              |       |      | 0.950 |       |      | 0.116 |       |      | 0.545 |       |      |
| Satd. Flow (perm)       | 1678                                                                               | 3225  | 0    | 1678  | 3423  | 0    | 205   | 1694  | 0    | 996   | 1796  | 0    |
| Right Turn on Red       |                                                                                    |       | Yes  |       |       | Yes  |       |       | Yes  |       |       | No   |
| Satd. Flow (RTOR)       |                                                                                    | 30    |      |       | 7     |      |       | 11    |      |       |       |      |
| Link Speed (mph)        |                                                                                    | 30    |      |       | 30    |      |       | 30    |      |       | 25    |      |
| Link Distance (ft)      |                                                                                    | 436   |      |       | 368   |      |       | 438   |      |       | 355   |      |
| Travel Time (s)         |                                                                                    | 9.9   |      |       | 8.4   |      |       | 10.0  |      |       | 9.7   |      |
| Peak Hour Factor        | 0.88                                                                               | 0.88  | 0.88 | 0.86  | 0.86  | 0.86 | 0.80  | 0.80  | 0.80 | 0.81  | 0.81  | 0.81 |
| Heavy Vehicles (%)      | 4%                                                                                 | 4%    | 4%   | 4%    | 4%    | 4%   | 4%    | 4%    | 4%   | 4%    | 4%    | 4%   |
| Adj. Flow (vph)         | 55                                                                                 | 431   | 151  | 207   | 797   | 83   | 188   | 206   | 78   | 130   | 433   | 57   |
| Shared Lane Traffic (%) |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 55                                                                                 | 582   | 0    | 207   | 880   | 0    | 188   | 284   | 0    | 130   | 490   | 0    |
| Turn Type               | Prot                                                                               | NA    |      | Prot  | NA    |      | pm+pt | NA    |      | pm+pt | NA    |      |
| Protected Phases        | 5                                                                                  | 2     |      | 1     | 6     |      | 7     | 4     |      | 3     | 8     |      |
| Permitted Phases        |                                                                                    |       |      |       |       |      | 4     |       |      | 8     |       |      |
| Detector Phase          | 5                                                                                  | 2     |      | 1     | 6     |      | 7     | 4     |      | 3     | 8     |      |
| Switch Phase            |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Minimum Initial (s)     | 5.0                                                                                | 15.0  |      | 5.0   | 15.0  |      | 5.0   | 10.0  |      | 5.0   | 10.0  |      |
| Minimum Split (s)       | 9.7                                                                                | 21.6  |      | 9.7   | 21.6  |      | 9.3   | 16.8  |      | 9.3   | 16.8  |      |
| Total Split (s)         | 17.7                                                                               | 41.6  |      | 17.7  | 41.6  |      | 22.3  | 36.8  |      | 22.3  | 36.8  |      |
| Total Split (%)         | 11.7%                                                                              | 27.5% |      | 11.7% | 27.5% |      | 14.7% | 24.3% |      | 14.7% | 24.3% |      |
| Yellow Time (s)         | 3.0                                                                                | 4.1   |      | 3.0   | 4.1   |      | 3.3   | 4.4   |      | 3.3   | 4.4   |      |
| All-Red Time (s)        | 1.7                                                                                | 2.5   |      | 1.7   | 2.5   |      | 1.0   | 2.4   |      | 1.0   | 2.4   |      |
| Lost Time Adjust (s)    | 0.0                                                                                | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      |
| Total Lost Time (s)     | 4.7                                                                                | 6.6   |      | 4.7   | 6.6   |      | 4.3   | 6.8   |      | 4.3   | 6.8   |      |
| Lead/Lag                | Lead                                                                               | Lag   |      | Lead  | Lag   |      | Lead  | Lag   |      | Lead  | Lag   |      |
| Lead-Lag Optimize?      | Yes                                                                                | Yes   |      | Yes   | Yes   |      | Yes   | Yes   |      | Yes   | Yes   |      |
| Recall Mode             | None                                                                               | Min   |      | None  | Min   |      | None  | None  |      | None  | None  |      |
| Act Effect Green (s)    | 7.9                                                                                | 27.8  |      | 13.1  | 35.2  |      | 51.0  | 35.1  |      | 42.0  | 30.2  |      |
| Actuated g/C Ratio      | 0.07                                                                               | 0.26  |      | 0.12  | 0.33  |      | 0.47  | 0.33  |      | 0.39  | 0.28  |      |
| v/c Ratio               | 0.45                                                                               | 0.68  |      | 1.02  | 0.78  |      | 0.65  | 0.51  |      | 0.29  | 0.98  |      |
| Control Delay           | 61.3                                                                               | 38.6  |      | 117.4 | 39.8  |      | 31.9  | 33.5  |      | 19.3  | 75.1  |      |
| Queue Delay             | 0.0                                                                                | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      |
| Total Delay             | 61.3                                                                               | 38.6  |      | 117.4 | 39.8  |      | 31.9  | 33.5  |      | 19.3  | 75.1  |      |
| LOS                     | E                                                                                  | D     |      | F     | D     |      | C     | C     |      | B     | E     |      |
| Approach Delay          |                                                                                    | 40.5  |      |       | 54.6  |      |       | 32.9  |      |       | 63.4  |      |
| Approach LOS            |                                                                                    | D     |      |       | D     |      |       | C     |      |       | E     |      |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Background Conditions Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

| Lane Group              | Ø9   |
|-------------------------|------|
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Heavy Vehicles (%)      |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 33.0 |
| Total Split (s)         | 33.0 |
| Total Split (%)         | 22%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Background Conditions Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  | 38                                                                                | 182                                                                               |                                                                                   | ~159                                                                              | 297                                                                               |                                                                                   | 77                                                                                 | 156                                                                                 |                                                                                     | 51                                                                                  | ~348                                                                                |                                                                                     |
| Queue Length 95th (ft)  | 80                                                                                | 243                                                                               |                                                                                   | #309                                                                              | 382                                                                               |                                                                                   | 128                                                                                | 223                                                                                 |                                                                                     | 83                                                                                  | #517                                                                                |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 356                                                                               |                                                                                   |                                                                                   | 288                                                                               |                                                                                   |                                                                                    | 358                                                                                 |                                                                                     |                                                                                     | 275                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 200                                                                               |                                                                                   |                                                                                   | 175                                                                               |                                                                                   |                                                                                   | 210                                                                                |                                                                                     |                                                                                     | 170                                                                                 |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 203                                                                               | 1074                                                                              |                                                                                   | 203                                                                               | 1123                                                                              |                                                                                   | 344                                                                                | 558                                                                                 |                                                                                     | 583                                                                                 | 502                                                                                 |                                                                                     |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       | 0.27                                                                              | 0.54                                                                              |                                                                                   | 1.02                                                                              | 0.78                                                                              |                                                                                   | 0.55                                                                               | 0.51                                                                                |                                                                                     | 0.22                                                                                | 0.98                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 151.4

Actuated Cycle Length: 107.8

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 49.7

Intersection LOS: D

Intersection Capacity Utilization 73.6%

ICU Level of Service D

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)

|                                                                                        |                                                                                        |                                                                                        |                                                                                         |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø9 |  Ø3 |  Ø4 |
| 17.7 s                                                                                 | 41.6 s                                                                                 | 33 s                                                                                   | 22.3 s                                                                                  | 36.8 s                                                                                   |
|  Ø5 |  Ø6 |                                                                                        |  Ø7 |  Ø8 |
| 17.7 s                                                                                 | 41.6 s                                                                                 |                                                                                        | 22.3 s                                                                                  | 36.8 s                                                                                   |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø9 |
| Queue Length 50th (ft)  |    |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |



# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway/2040 Back St (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |  |
| Traffic Volume (vph)    | 24                                                                                | 471                                                                               | 8                                                                                 | 25                                                                                | 892                                                                               | 42                                                                                | 51                                                                                 | 5                                                                                   | 20                                                                                  | 29                                                                                  | 1                                                                                   | 11                                                                                  |
| Future Volume (vph)     | 24                                                                                | 471                                                                               | 8                                                                                 | 25                                                                                | 892                                                                               | 42                                                                                | 51                                                                                 | 5                                                                                   | 20                                                                                  | 29                                                                                  | 1                                                                                   | 11                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                 | 13                                                                                  | 13                                                                                  | 12                                                                                  | 13                                                                                  | 13                                                                                  |
| Storage Length (ft)     | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 25                                                                                  | 0                                                                                   |                                                                                     | 25                                                                                  |
| Storage Lanes           | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 1                                                                                   | 0                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)       | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   | 0.993                                                                             |                                                                                   |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected           |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   | 0.999                                                                             |                                                                                   |                                                                                    | 0.956                                                                               |                                                                                     |                                                                                     | 0.954                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3342                                                                              | 0                                                                                 | 0                                                                                 | 3329                                                                              | 0                                                                                 | 0                                                                                  | 1805                                                                                | 1605                                                                                | 0                                                                                   | 1801                                                                                | 1605                                                                                |
| Flt Permitted           |                                                                                   | 0.883                                                                             |                                                                                   |                                                                                   | 0.928                                                                             |                                                                                   |                                                                                    | 0.720                                                                               |                                                                                     |                                                                                     | 0.681                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 2957                                                                              | 0                                                                                 | 0                                                                                 | 3092                                                                              | 0                                                                                 | 0                                                                                  | 1359                                                                                | 1605                                                                                | 0                                                                                   | 1286                                                                                | 1605                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 3                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    |                                                                                     | 157                                                                                 |                                                                                     |                                                                                     | 157                                                                                 |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 442                                                                               |                                                                                   |                                                                                   | 502                                                                               |                                                                                   |                                                                                    | 142                                                                                 |                                                                                     |                                                                                     | 135                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                    | 3.9                                                                                 |                                                                                     |                                                                                     | 3.7                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.80                                                                               | 0.80                                                                                | 0.80                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Heavy Vehicles (%)      | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                 | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  |
| Adj. Flow (vph)         | 30                                                                                | 589                                                                               | 10                                                                                | 28                                                                                | 1002                                                                              | 47                                                                                | 64                                                                                 | 6                                                                                   | 25                                                                                  | 32                                                                                  | 1                                                                                   | 12                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 629                                                                               | 0                                                                                 | 0                                                                                 | 1077                                                                              | 0                                                                                 | 0                                                                                  | 70                                                                                  | 25                                                                                  | 0                                                                                   | 33                                                                                  | 12                                                                                  |
| Turn Type               | pm+pt                                                                             | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  | Perm                                                                                | Perm                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases        | 1                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                  |                                                                                     | 4                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   |
| Detector Phase          | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                  | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0                                                                                | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |
| Minimum Split (s)       | 9.0                                                                               | 20.8                                                                              |                                                                                   | 20.8                                                                              | 20.8                                                                              |                                                                                   | 11.0                                                                               | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                |
| Total Split (s)         | 9.0                                                                               | 39.0                                                                              |                                                                                   | 30.0                                                                              | 30.0                                                                              |                                                                                   | 14.0                                                                               | 14.0                                                                                | 14.0                                                                                | 14.0                                                                                | 14.0                                                                                | 14.0                                                                                |
| Total Split (%)         | 12.0%                                                                             | 52.0%                                                                             |                                                                                   | 40.0%                                                                             | 40.0%                                                                             |                                                                                   | 18.7%                                                                              | 18.7%                                                                               | 18.7%                                                                               | 18.7%                                                                               | 18.7%                                                                               | 18.7%                                                                               |
| Yellow Time (s)         | 3.0                                                                               | 4.3                                                                               |                                                                                   | 4.3                                                                               | 4.3                                                                               |                                                                                   | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| All-Red Time (s)        | 1.0                                                                               | 1.5                                                                               |                                                                                   | 1.5                                                                               | 1.5                                                                               |                                                                                   | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     |                                                                                   | 5.8                                                                               |                                                                                   |                                                                                   | 5.8                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 | 4.0                                                                                 |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |
| Lead/Lag                | Lead                                                                              |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               |                                                                                   | Lag                                                                                | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode             | Min                                                                               | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Act Effect Green (s)    |                                                                                   | 58.6                                                                              |                                                                                   |                                                                                   | 49.1                                                                              |                                                                                   |                                                                                    | 8.8                                                                                 | 8.8                                                                                 |                                                                                     | 8.8                                                                                 | 8.8                                                                                 |
| Actuated g/C Ratio      |                                                                                   | 0.78                                                                              |                                                                                   |                                                                                   | 0.65                                                                              |                                                                                   |                                                                                    | 0.12                                                                                | 0.12                                                                                |                                                                                     | 0.12                                                                                | 0.12                                                                                |
| v/c Ratio               |                                                                                   | 0.27                                                                              |                                                                                   |                                                                                   | 0.53                                                                              |                                                                                   |                                                                                    | 0.44                                                                                | 0.08                                                                                |                                                                                     | 0.22                                                                                | 0.04                                                                                |
| Control Delay           |                                                                                   | 3.2                                                                               |                                                                                   |                                                                                   | 6.8                                                                               |                                                                                   |                                                                                    | 38.9                                                                                | 0.5                                                                                 |                                                                                     | 32.4                                                                                | 0.2                                                                                 |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             |                                                                                   | 3.2                                                                               |                                                                                   |                                                                                   | 6.8                                                                               |                                                                                   |                                                                                    | 38.9                                                                                | 0.5                                                                                 |                                                                                     | 32.4                                                                                | 0.2                                                                                 |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | D                                                                                   | A                                                                                   |                                                                                     | C                                                                                   | A                                                                                   |
| Approach Delay          |                                                                                   | 3.2                                                                               |                                                                                   |                                                                                   | 6.8                                                                               |                                                                                   |                                                                                    | 28.8                                                                                |                                                                                     |                                                                                     | 23.8                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway 2040 Backgr (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

| Lane Group              | Ø3   |
|-------------------------|------|
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Heavy Vehicles (%)      |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 3    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 22.0 |
| Total Split (s)         | 22.0 |
| Total Split (%)         | 29%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                | Lead |
| Lead-Lag Optimize?      | Yes  |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  |                                                                                   | 34                                                                                |                                                                                   |                                                                                   | 66                                                                                |                                                                                   |                                                                                    | 31                                                                                  | 0                                                                                   |                                                                                     | 14                                                                                  | 0                                                                                   |
| Queue Length 95th (ft)  |                                                                                   | 54                                                                                |                                                                                   |                                                                                   | 139                                                                               |                                                                                   |                                                                                    | 58                                                                                  | 0                                                                                   |                                                                                     | 37                                                                                  | 0                                                                                   |
| Internal Link Dist (ft) |                                                                                   | 362                                                                               |                                                                                   |                                                                                   | 422                                                                               |                                                                                   |                                                                                    | 62                                                                                  |                                                                                     |                                                                                     | 55                                                                                  |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |
| Base Capacity (vph)     |                                                                                   | 2328                                                                              |                                                                                   |                                                                                   | 2024                                                                              |                                                                                   |                                                                                    | 189                                                                                 | 358                                                                                 |                                                                                     | 179                                                                                 | 358                                                                                 |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       |                                                                                   | 0.27                                                                              |                                                                                   |                                                                                   | 0.53                                                                              |                                                                                   |                                                                                    | 0.37                                                                                | 0.07                                                                                |                                                                                     | 0.18                                                                                | 0.03                                                                                |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 19 (25%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.53

Intersection Signal Delay: 7.1

Intersection LOS: A

Intersection Capacity Utilization 62.0%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                            |                                                                                        |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø3 |  Ø4 |
| 9 s                                                                                        | 30 s                                                                                       | 22 s                                                                                   | 14 s                                                                                     |
|  Ø6 (R) |                                                                                            |                                                                                        |                                                                                          |
| 39 s                                                                                       |                                                                                            |                                                                                        |                                                                                          |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø3 |
| Queue Length 50th (ft)  |    |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |



# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) Background Conditions Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |  |  |  |                                                                                     |
| Traffic Volume (vph)    | 1                                                                                 | 456                                                                               | 58                                                                                | 54                                                                                | 958                                                                               | 2                                                                                 | 76                                                                                 | 2                                                                                   | 31                                                                                  | 2                                                                                   | 2                                                                                   | 1                                                                                   |
| Future Volume (vph)     | 1                                                                                 | 456                                                                               | 58                                                                                | 54                                                                                | 958                                                                               | 2                                                                                 | 76                                                                                 | 2                                                                                   | 31                                                                                  | 2                                                                                   | 2                                                                                   | 1                                                                                   |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                 | 10                                                                                  | 10                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 250                                                                                 | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes           | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.983                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     | 0.962                                                                               |                                                                                     |
| Flt Protected           |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                    | 0.953                                                                               |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3298                                                                              | 0                                                                                 | 0                                                                                 | 3345                                                                              | 0                                                                                 | 0                                                                                  | 1625                                                                                | 1449                                                                                | 1736                                                                                | 1757                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.955                                                                             |                                                                                   |                                                                                   | 0.876                                                                             |                                                                                   |                                                                                    | 0.729                                                                               |                                                                                     | 0.702                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 3150                                                                              | 0                                                                                 | 0                                                                                 | 2939                                                                              | 0                                                                                 | 0                                                                                  | 1243                                                                                | 1449                                                                                | 1282                                                                                | 1757                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 38                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 111                                                                                 |                                                                                     | 1                                                                                   |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 502                                                                               |                                                                                   |                                                                                   | 407                                                                               |                                                                                   |                                                                                    | 423                                                                                 |                                                                                     |                                                                                     | 198                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                    | 11.5                                                                                |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                |
| Heavy Vehicles (%)      | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                 | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  |
| Adj. Flow (vph)         | 1                                                                                 | 570                                                                               | 73                                                                                | 59                                                                                | 1041                                                                              | 2                                                                                 | 83                                                                                 | 2                                                                                   | 34                                                                                  | 3                                                                                   | 3                                                                                   | 1                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 644                                                                               | 0                                                                                 | 0                                                                                 | 1102                                                                              | 0                                                                                 | 0                                                                                  | 85                                                                                  | 34                                                                                  | 3                                                                                   | 4                                                                                   | 0                                                                                   |
| Turn Type               | pm+pt                                                                             | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  | Perm                                                                                | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        | 1                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                  |                                                                                     | 4                                                                                   | 4                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                  | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 3.0                                                                               | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0                                                                                | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 7.3                                                                               | 21.3                                                                              |                                                                                   | 21.3                                                                              | 21.3                                                                              |                                                                                   | 11.9                                                                               | 11.9                                                                                | 11.9                                                                                | 11.9                                                                                | 11.9                                                                                |                                                                                     |
| Total Split (s)         | 7.3                                                                               | 55.0                                                                              |                                                                                   | 47.7                                                                              | 47.7                                                                              |                                                                                   | 20.0                                                                               | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                |                                                                                     |
| Total Split (%)         | 9.7%                                                                              | 73.3%                                                                             |                                                                                   | 63.6%                                                                             | 63.6%                                                                             |                                                                                   | 26.7%                                                                              | 26.7%                                                                               | 26.7%                                                                               | 26.7%                                                                               | 26.7%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.3                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.0                                                                               | 1.3                                                                               |                                                                                   | 1.3                                                                               | 1.3                                                                               |                                                                                   | 1.9                                                                                | 1.9                                                                                 | 1.9                                                                                 | 1.9                                                                                 | 1.9                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 6.3                                                                               |                                                                                   |                                                                                   | 6.3                                                                               |                                                                                   |                                                                                    | 4.9                                                                                 | 4.9                                                                                 | 4.9                                                                                 | 4.9                                                                                 |                                                                                     |
| Lead/Lag                | Lead                                                                              |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | Max                                                                               | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 56.8                                                                              |                                                                                   |                                                                                   | 41.4                                                                              |                                                                                   |                                                                                    | 9.4                                                                                 | 9.4                                                                                 | 9.4                                                                                 | 9.4                                                                                 |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.76                                                                              |                                                                                   |                                                                                   | 0.55                                                                              |                                                                                   |                                                                                    | 0.13                                                                                | 0.13                                                                                | 0.13                                                                                | 0.13                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.27                                                                              |                                                                                   |                                                                                   | 0.68                                                                              |                                                                                   |                                                                                    | 0.54                                                                                | 0.12                                                                                | 0.02                                                                                | 0.02                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 2.3                                                                               |                                                                                   |                                                                                   | 6.8                                                                               |                                                                                   |                                                                                    | 43.3                                                                                | 0.9                                                                                 | 26.5                                                                                | 24.3                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 2.3                                                                               |                                                                                   |                                                                                   | 6.8                                                                               |                                                                                   |                                                                                    | 43.3                                                                                | 0.9                                                                                 | 26.5                                                                                | 24.3                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | D                                                                                   | A                                                                                   | C                                                                                   | C                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 2.3                                                                               |                                                                                   |                                                                                   | 6.8                                                                               |                                                                                   |                                                                                    | 31.2                                                                                |                                                                                     |                                                                                     | 25.3                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |

# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) Background Conditions Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   | 56                                                                                |                                                                                   |                                                                                    | 38                                                                                  | 0                                                                                   | 1                                                                                   | 1                                                                                   |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 32                                                                                |                                                                                   |                                                                                   | 63                                                                                |                                                                                   |                                                                                    | 76                                                                                  | 0                                                                                   | 7                                                                                   | 8                                                                                   |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 422                                                                               |                                                                                   |                                                                                   | 327                                                                               |                                                                                   |                                                                                    | 343                                                                                 |                                                                                     |                                                                                     | 118                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 250                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 2410                                                                              |                                                                                   |                                                                                   | 1622                                                                              |                                                                                   |                                                                                    | 250                                                                                 | 380                                                                                 | 258                                                                                 | 354                                                                                 |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 7                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.27                                                                              |                                                                                   |                                                                                   | 0.68                                                                              |                                                                                   |                                                                                    | 0.34                                                                                | 0.09                                                                                | 0.01                                                                                | 0.01                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 21 (28%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 6.9

Intersection LOS: A

Intersection Capacity Utilization 68.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                            |                                                                                      |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  |  Ø4 |
| 7.3 s                                                                                      | 47.7 s                                                                                     |                                                                                      | 20 s                                                                                     |
|  Ø6 (R) |                                                                                            |  |                                                                                          |
| 55 s                                                                                       |                                                                                            |                                                                                      |                                                                                          |

## 108: Burroughs Road &amp; Route 58 (Black Rock Turnpike)

## 2040 Background Conditions

## Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 29                                                                                | 464                                                                               | 8                                                                                 | 5                                                                                 | 963                                                                               | 71                                                                                | 7                                                                                 | 88                                                                                  | 3                                                                                   | 146                                                                                 | 76                                                                                  | 75                                                                                  |
| Future Volume (vph)     | 29                                                                                | 464                                                                               | 8                                                                                 | 5                                                                                 | 963                                                                               | 71                                                                                | 7                                                                                 | 88                                                                                  | 3                                                                                   | 146                                                                                 | 76                                                                                  | 75                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 16                                                                                  | 12                                                                                  | 12                                                                                  | 16                                                                                  | 12                                                                                  |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   | 0.990                                                                             |                                                                                   |                                                                                   | 0.996                                                                               |                                                                                     |                                                                                     | 0.966                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.996                                                                               |                                                                                     |                                                                                     | 0.976                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3307                                                                              | 0                                                                                 | 0                                                                                 | 3290                                                                              | 0                                                                                 | 0                                                                                 | 2034                                                                                | 0                                                                                   | 0                                                                                   | 1934                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.848                                                                             |                                                                                   |                                                                                   | 0.953                                                                             |                                                                                   |                                                                                   | 0.970                                                                               |                                                                                     |                                                                                     | 0.805                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 2813                                                                              | 0                                                                                 | 0                                                                                 | 3136                                                                              | 0                                                                                 | 0                                                                                 | 1981                                                                                | 0                                                                                   | 0                                                                                   | 1595                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 3                                                                                 |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   | 2                                                                                   |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 407                                                                               |                                                                                   |                                                                                   | 996                                                                               |                                                                                   |                                                                                   | 466                                                                                 |                                                                                     |                                                                                     | 300                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                   | 22.6                                                                              |                                                                                   |                                                                                   | 12.7                                                                                |                                                                                     |                                                                                     | 8.2                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.80                                                                              | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                |
| Heavy Vehicles (%)      | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                  | 5%                                                                                  | 5%                                                                                  | 5%                                                                                  | 5%                                                                                  |
| Adj. Flow (vph)         | 36                                                                                | 580                                                                               | 10                                                                                | 5                                                                                 | 1014                                                                              | 75                                                                                | 9                                                                                 | 110                                                                                 | 4                                                                                   | 183                                                                                 | 95                                                                                  | 94                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 626                                                                               | 0                                                                                 | 0                                                                                 | 1094                                                                              | 0                                                                                 | 0                                                                                 | 123                                                                                 | 0                                                                                   | 0                                                                                   | 372                                                                                 | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 6                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 4                                                                                   |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 15.0                                                                              | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 9.0                                                                               | 9.0                                                                                 |                                                                                     | 9.0                                                                                 | 9.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 20.6                                                                              | 20.6                                                                              |                                                                                   | 20.6                                                                              | 20.6                                                                              |                                                                                   | 14.4                                                                              | 14.4                                                                                |                                                                                     | 14.4                                                                                | 14.4                                                                                |                                                                                     |
| Total Split (s)         | 44.0                                                                              | 44.0                                                                              |                                                                                   | 44.0                                                                              | 44.0                                                                              |                                                                                   | 31.0                                                                              | 31.0                                                                                |                                                                                     | 31.0                                                                                | 31.0                                                                                |                                                                                     |
| Total Split (%)         | 58.7%                                                                             | 58.7%                                                                             |                                                                                   | 58.7%                                                                             | 58.7%                                                                             |                                                                                   | 41.3%                                                                             | 41.3%                                                                               |                                                                                     | 41.3%                                                                               | 41.3%                                                                               |                                                                                     |
| Yellow Time (s)         | 4.1                                                                               | 4.1                                                                               |                                                                                   | 4.1                                                                               | 4.1                                                                               |                                                                                   | 3.1                                                                               | 3.1                                                                                 |                                                                                     | 3.1                                                                                 | 3.1                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.5                                                                               | 1.5                                                                               |                                                                                   | 1.5                                                                               | 1.5                                                                               |                                                                                   | 2.3                                                                               | 2.3                                                                                 |                                                                                     | 2.3                                                                                 | 2.3                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   | 5.4                                                                                 |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | C-Max                                                                             | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                              | None                                                                                |                                                                                     | None                                                                                | None                                                                                |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 43.7                                                                              |                                                                                   |                                                                                   | 43.7                                                                              |                                                                                   |                                                                                   | 20.3                                                                                |                                                                                     |                                                                                     | 20.3                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.58                                                                              |                                                                                   |                                                                                   | 0.58                                                                              |                                                                                   |                                                                                   | 0.27                                                                                |                                                                                     |                                                                                     | 0.27                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.38                                                                              |                                                                                   |                                                                                   | 0.60                                                                              |                                                                                   |                                                                                   | 0.23                                                                                |                                                                                     |                                                                                     | 0.83                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 6.2                                                                               |                                                                                   |                                                                                   | 12.6                                                                              |                                                                                   |                                                                                   | 20.4                                                                                |                                                                                     |                                                                                     | 39.1                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 6.2                                                                               |                                                                                   |                                                                                   | 12.6                                                                              |                                                                                   |                                                                                   | 20.4                                                                                |                                                                                     |                                                                                     | 39.1                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 6.2                                                                               |                                                                                   |                                                                                   | 12.6                                                                              |                                                                                   |                                                                                   | 20.4                                                                                |                                                                                     |                                                                                     | 39.1                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 28                                                                                |                                                                                   |                                                                                   | 157                                                                               |                                                                                   |                                                                                   | 43                                                                                  |                                                                                     |                                                                                     | 149                                                                                 |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 34                                                                                |                                                                                   |                                                                                   | 253                                                                               |                                                                                   |                                                                                   | 66                                                                                  |                                                                                     |                                                                                     | 191                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 327                                                                               |                                                                                   |                                                                                   | 916                                                                               |                                                                                   |                                                                                   | 386                                                                                 |                                                                                     |                                                                                     | 220                                                                                 |                                                                                     |

# 108: Burroughs Road & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

2040 Background Conditions  
Timing Plan: Weekday AM Peak

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Turn Bay Length (ft)   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)    |                                                                                   | 1638                                                                              |                                                                                   |                                                                                   | 1831                                                                              |                                                                                   |                                                                                    | 677                                                                                 |                                                                                     |                                                                                     | 560                                                                                 |                                                                                     |
| Starvation Cap Reductn |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   | 0.38                                                                              |                                                                                   |                                                                                   | 0.60                                                                              |                                                                                   |                                                                                    | 0.18                                                                                |                                                                                     |                                                                                     | 0.66                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 20 (27%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 15.7

Intersection LOS: B

Intersection Capacity Utilization 67.4%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)

|                                                                                           |                                                                                    |
|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|  Ø2 (R)  |   |
| 44 s                                                                                      | 31 s                                                                               |
|  Ø6 (R) |  |
| 44 s                                                                                      | 31 s                                                                               |



# 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | EBR2                                                                              | WBL2                                                                              | WBL                                                                               | WBT                                                                                | WBR                                                                                 | NWL                                                                                 | NWR                                                                                 | NWR2                                                                                | NET                                                                                 |
| Lane Configurations     |                                                                                   |  |  |                                                                                   |                                                                                   |                                                                                   |  |                                                                                     |  |                                                                                     |                                                                                     |  |
| Traffic Volume (vph)    | 1                                                                                 | 243                                                                               | 371                                                                               | 1                                                                                 | 35                                                                                | 2                                                                                 | 585                                                                                | 1                                                                                   | 359                                                                                 | 5                                                                                   | 13                                                                                  | 1                                                                                   |
| Future Volume (vph)     | 1                                                                                 | 243                                                                               | 371                                                                               | 1                                                                                 | 35                                                                                | 2                                                                                 | 585                                                                                | 1                                                                                   | 359                                                                                 | 5                                                                                   | 13                                                                                  | 1                                                                                   |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 11                                                                                 | 12                                                                                  | 10                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                               | 0.95                                                                                | 0.97                                                                                | 0.95                                                                                | 0.95                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 0.993                                                                               |                                                                                     |                                                                                     | 0.910                                                                               |
| Flt Protected           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.997                                                                              |                                                                                     | 0.955                                                                               |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 1827                                                                              | 1553                                                                              | 0                                                                                 | 0                                                                                 | 0                                                                                 | 3345                                                                               | 0                                                                                   | 3137                                                                                | 0                                                                                   | 0                                                                                   | 1662                                                                                |
| Flt Permitted           |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.908                                                                              |                                                                                     | 0.955                                                                               |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 1821                                                                              | 1553                                                                              | 0                                                                                 | 0                                                                                 | 0                                                                                 | 3047                                                                               | 0                                                                                   | 3137                                                                                | 0                                                                                   | 0                                                                                   | 1662                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                    | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |
| Satd. Flow (RTOR)       |                                                                                   |                                                                                   | 57                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 152                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 30                                                                                 |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |
| Link Distance (ft)      |                                                                                   | 996                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 549                                                                                |                                                                                     | 218                                                                                 |                                                                                     |                                                                                     | 653                                                                                 |
| Travel Time (s)         |                                                                                   | 22.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 12.5                                                                               |                                                                                     | 5.0                                                                                 |                                                                                     |                                                                                     | 17.8                                                                                |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.81                                                                              | 0.81                                                                              | 0.81                                                                               | 0.81                                                                                | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                |
| Heavy Vehicles (%)      | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                 | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  |
| Adj. Flow (vph)         | 1                                                                                 | 304                                                                               | 464                                                                               | 1                                                                                 | 43                                                                                | 2                                                                                 | 722                                                                                | 1                                                                                   | 449                                                                                 | 6                                                                                   | 16                                                                                  | 1                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 305                                                                               | 465                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 768                                                                                | 0                                                                                   | 471                                                                                 | 0                                                                                   | 0                                                                                   | 3                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                | pm+ov                                                                             |                                                                                   | Perm                                                                              | Perm                                                                              | NA                                                                                 |                                                                                     | Prot                                                                                |                                                                                     |                                                                                     | NA                                                                                  |
| Protected Phases        |                                                                                   | 2                                                                                 | 4                                                                                 |                                                                                   |                                                                                   |                                                                                   | 2                                                                                  |                                                                                     | 4                                                                                   |                                                                                     |                                                                                     | 5                                                                                   |
| Permitted Phases        | 2                                                                                 |                                                                                   | 2                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector Phase          | 2                                                                                 | 2                                                                                 | 4                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 | 2                                                                                  |                                                                                     | 4                                                                                   |                                                                                     |                                                                                     | 5                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 15.0                                                                              | 15.0                                                                              | 9.0                                                                               |                                                                                   | 15.0                                                                              | 15.0                                                                              | 15.0                                                                               |                                                                                     | 9.0                                                                                 |                                                                                     |                                                                                     | 5.0                                                                                 |
| Minimum Split (s)       | 22.8                                                                              | 22.8                                                                              | 15.4                                                                              |                                                                                   | 22.8                                                                              | 22.8                                                                              | 22.8                                                                               |                                                                                     | 15.4                                                                                |                                                                                     |                                                                                     | 12.6                                                                                |
| Total Split (s)         | 35.8                                                                              | 35.8                                                                              | 33.4                                                                              |                                                                                   | 35.8                                                                              | 35.8                                                                              | 35.8                                                                               |                                                                                     | 33.4                                                                                |                                                                                     |                                                                                     | 19.6                                                                                |
| Total Split (%)         | 40.3%                                                                             | 40.3%                                                                             | 37.6%                                                                             |                                                                                   | 40.3%                                                                             | 40.3%                                                                             | 40.3%                                                                              |                                                                                     | 37.6%                                                                               |                                                                                     |                                                                                     | 22.1%                                                                               |
| Yellow Time (s)         | 4.1                                                                               | 4.1                                                                               | 3.3                                                                               |                                                                                   | 4.1                                                                               | 4.1                                                                               | 4.1                                                                                |                                                                                     | 3.3                                                                                 |                                                                                     |                                                                                     | 3.3                                                                                 |
| All-Red Time (s)        | 3.7                                                                               | 3.7                                                                               | 3.1                                                                               |                                                                                   | 3.7                                                                               | 3.7                                                                               | 3.7                                                                                |                                                                                     | 3.1                                                                                 |                                                                                     |                                                                                     | 4.3                                                                                 |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Total Lost Time (s)     |                                                                                   | 7.8                                                                               | 6.4                                                                               |                                                                                   |                                                                                   |                                                                                   | 7.8                                                                                |                                                                                     | 6.4                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | Min                                                                               | Min                                                                               | None                                                                              |                                                                                   | Min                                                                               | Min                                                                               | Min                                                                                |                                                                                     | None                                                                                |                                                                                     |                                                                                     | None                                                                                |
| Act Effect Green (s)    |                                                                                   | 19.2                                                                              | 44.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 19.2                                                                               |                                                                                     | 11.3                                                                                |                                                                                     |                                                                                     | 5.9                                                                                 |
| Actuated g/C Ratio      |                                                                                   | 0.38                                                                              | 0.88                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.38                                                                               |                                                                                     | 0.23                                                                                |                                                                                     |                                                                                     | 0.12                                                                                |
| v/c Ratio               |                                                                                   | 0.44                                                                              | 0.34                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.66                                                                               |                                                                                     | 0.57                                                                                |                                                                                     |                                                                                     | 0.02                                                                                |
| Control Delay           |                                                                                   | 15.7                                                                              | 3.1                                                                               |                                                                                   |                                                                                   |                                                                                   | 17.4                                                                               |                                                                                     | 16.2                                                                                |                                                                                     |                                                                                     | 27.5                                                                                |
| Queue Delay             |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Total Delay             |                                                                                   | 15.7                                                                              | 3.1                                                                               |                                                                                   |                                                                                   |                                                                                   | 17.4                                                                               |                                                                                     | 16.2                                                                                |                                                                                     |                                                                                     | 27.5                                                                                |
| LOS                     |                                                                                   | B                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                  |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | C                                                                                   |
| Approach Delay          |                                                                                   | 8.1                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 17.4                                                                               |                                                                                     | 16.2                                                                                |                                                                                     |                                                                                     | 27.5                                                                                |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | B                                                                                  |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | C                                                                                   |
| Queue Length 50th (ft)  |                                                                                   | 44                                                                                | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 64                                                                                 |                                                                                     | 29                                                                                  |                                                                                     |                                                                                     | 1                                                                                   |
| Queue Length 95th (ft)  |                                                                                   | 144                                                                               | 84                                                                                |                                                                                   |                                                                                   |                                                                                   | 180                                                                                |                                                                                     | 91                                                                                  |                                                                                     |                                                                                     | 8                                                                                   |
| Internal Link Dist (ft) |                                                                                   | 916                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 469                                                                                |                                                                                     | 138                                                                                 |                                                                                     |                                                                                     | 573                                                                                 |

# 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)

## Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |      |      |       |       |      |
|-------------------------|-----------------------------------------------------------------------------------|------|------|-------|-------|------|
| Lane Group              | NER                                                                               | NER2 | SWL2 | SWL   | SWT   | SWR  |
| Lane Configurations     |  |      |      |       |       |      |
| Traffic Volume (vph)    | 1                                                                                 | 1    | 1    | 17    | 0     | 6    |
| Future Volume (vph)     | 1                                                                                 | 1    | 1    | 17    | 0     | 6    |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900 | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12                                                                                | 12   | 12   | 15    | 12    | 12   |
| Lane Util. Factor       | 1.00                                                                              | 1.00 | 1.00 | 1.00  | 1.00  | 1.00 |
| Frt                     |                                                                                   |      |      |       | 0.968 |      |
| Flt Protected           |                                                                                   |      |      |       | 0.963 |      |
| Satd. Flow (prot)       | 0                                                                                 | 0    | 0    | 0     | 1703  | 0    |
| Flt Permitted           |                                                                                   |      |      |       |       |      |
| Satd. Flow (perm)       | 0                                                                                 | 0    | 0    | 0     | 1768  | 0    |
| Right Turn on Red       |                                                                                   | No   |      |       |       | No   |
| Satd. Flow (RTOR)       |                                                                                   |      |      |       |       |      |
| Link Speed (mph)        |                                                                                   |      |      |       | 25    |      |
| Link Distance (ft)      |                                                                                   |      |      |       | 695   |      |
| Travel Time (s)         |                                                                                   |      |      |       | 19.0  |      |
| Peak Hour Factor        | 0.80                                                                              | 0.80 | 0.94 | 0.94  | 0.94  | 0.94 |
| Heavy Vehicles (%)      | 4%                                                                                | 4%   | 4%   | 4%    | 4%    | 4%   |
| Adj. Flow (vph)         | 1                                                                                 | 1    | 1    | 18    | 0     | 6    |
| Shared Lane Traffic (%) |                                                                                   |      |      |       |       |      |
| Lane Group Flow (vph)   | 0                                                                                 | 0    | 0    | 0     | 25    | 0    |
| Turn Type               |                                                                                   |      |      | Perm  | NA    |      |
| Protected Phases        |                                                                                   |      |      |       | 5     |      |
| Permitted Phases        |                                                                                   |      |      | 5     |       |      |
| Detector Phase          |                                                                                   |      |      | 5     | 5     |      |
| Switch Phase            |                                                                                   |      |      |       |       |      |
| Minimum Initial (s)     |                                                                                   |      |      | 5.0   | 5.0   |      |
| Minimum Split (s)       |                                                                                   |      |      | 12.6  | 12.6  |      |
| Total Split (s)         |                                                                                   |      |      | 19.6  | 19.6  |      |
| Total Split (%)         |                                                                                   |      |      | 22.1% | 22.1% |      |
| Yellow Time (s)         |                                                                                   |      |      | 3.3   | 3.3   |      |
| All-Red Time (s)        |                                                                                   |      |      | 4.3   | 4.3   |      |
| Lost Time Adjust (s)    |                                                                                   |      |      |       | 0.0   |      |
| Total Lost Time (s)     |                                                                                   |      |      |       | 7.6   |      |
| Lead/Lag                |                                                                                   |      |      |       |       |      |
| Lead-Lag Optimize?      |                                                                                   |      |      |       |       |      |
| Recall Mode             |                                                                                   |      |      | None  | None  |      |
| Act Effct Green (s)     |                                                                                   |      |      |       | 5.9   |      |
| Actuated g/C Ratio      |                                                                                   |      |      |       | 0.12  |      |
| v/c Ratio               |                                                                                   |      |      |       | 0.12  |      |
| Control Delay           |                                                                                   |      |      |       | 27.6  |      |
| Queue Delay             |                                                                                   |      |      |       | 0.0   |      |
| Total Delay             |                                                                                   |      |      |       | 27.6  |      |
| LOS                     |                                                                                   |      |      |       | C     |      |
| Approach Delay          |                                                                                   |      |      |       | 27.6  |      |
| Approach LOS            |                                                                                   |      |      |       | C     |      |
| Queue Length 50th (ft)  |                                                                                   |      |      |       | 5     |      |
| Queue Length 95th (ft)  |                                                                                   |      |      |       | 32    |      |
| Internal Link Dist (ft) |                                                                                   |      |      |       | 615   |      |

109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike)
2049: Black Rock Turnpike & Route 58 (Black Rock Turnpike)

Timing Plan: Weekday AM Peak

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | EBR2                                                                              | WBL2                                                                              | WBL                                                                               | WBT                                                                                 | WBR                                                                                 | NWL                                                                                 | NWR                                                                                 | NWR2                                                                                | NET                                                                                 |
| Turn Bay Length (ft)   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)    |                                                                                   | 1102                                                                              | 1483                                                                              |                                                                                   |                                                                                   |                                                                                   | 1845                                                                                |                                                                                     | 1895                                                                                |                                                                                     |                                                                                     | 431                                                                                 |
| Starvation Cap Reductn |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Reduced v/c Ratio      |                                                                                   | 0.28                                                                              | 0.31                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.42                                                                                |                                                                                     | 0.25                                                                                |                                                                                     |                                                                                     | 0.01                                                                                |

Intersection Summary

Area Type:

Other

Cycle Length: 88.8

Actuated Cycle Length: 50.1

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 13.8

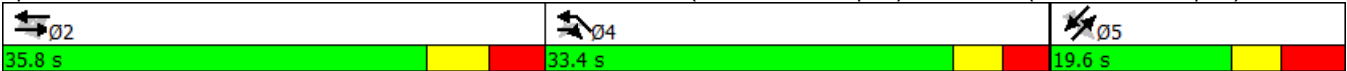
Intersection LOS: B

Intersection Capacity Utilization 73.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)/Route 58 (Tunxis Hill Cut



|                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                        |  |  |  |  |  |  |
| Lane Group             | NER                                                                               | NER2                                                                              | SWL2                                                                              | SWL                                                                               | SWT                                                                               | SWR                                                                               |
| Turn Bay Length (ft)   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Base Capacity (vph)    | 459                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Starvation Cap Reductn | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Storage Cap Reductn    | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Reduced v/c Ratio      | 0.05                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

201: Tunxis Hill Road & Route 58 (Tunxis Hill Cutoff)  
Lanes, Volumes, Timings

2040 Background Conditions

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |  |
| Traffic Volume (vph)    | 271                                                                               | 2                                                                                 | 64                                                                                | 633                                                                               | 0                                                                                 | 61                                                                                |
| Future Volume (vph)     | 271                                                                               | 2                                                                                 | 64                                                                                | 633                                                                               | 0                                                                                 | 61                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 10                                                                                | 10                                                                                |
| Storage Length (ft)     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 50                                                                                |
| Storage Lanes           |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |
| Taper Length (ft)       |                                                                                   |                                                                                   | 25                                                                                |                                                                                   | 25                                                                                |                                                                                   |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.999                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |
| Flt Protected           |                                                                                   |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 3352                                                                              | 0                                                                                 | 0                                                                                 | 1757                                                                              | 1705                                                                              | 1449                                                                              |
| Flt Permitted           |                                                                                   |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 3352                                                                              | 0                                                                                 | 0                                                                                 | 1757                                                                              | 1705                                                                              | 1449                                                                              |
| Link Speed (mph)        | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                | 25                                                                                |                                                                                   |
| Link Distance (ft)      | 1095                                                                              |                                                                                   |                                                                                   | 214                                                                               | 782                                                                               |                                                                                   |
| Travel Time (s)         | 24.9                                                                              |                                                                                   |                                                                                   | 4.9                                                                               | 21.3                                                                              |                                                                                   |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.91                                                                              | 0.91                                                                              | 0.80                                                                              | 0.80                                                                              |
| Heavy Vehicles (%)      | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                |
| Adj. Flow (vph)         | 339                                                                               | 3                                                                                 | 70                                                                                | 696                                                                               | 0                                                                                 | 76                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 342                                                                               | 0                                                                                 | 0                                                                                 | 766                                                                               | 0                                                                                 | 76                                                                                |
| Sign Control            | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 51.1% ICU Level of Service A

Analysis Period (min) 15



Intersection

Int Delay, s/veh 1.1

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↑↑   |      |      | ↑    | ↑    | ↑    |
| Traffic Vol, veh/h       | 271  | 2    | 64   | 633  | 0    | 61   |
| Future Vol, veh/h        | 271  | 2    | 64   | 633  | 0    | 61   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | 0    | 50   |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 80   | 80   | 91   | 91   | 80   | 80   |
| Heavy Vehicles, %        | 4    | 4    | 4    | 4    | 4    | 4    |
| Mvmt Flow                | 339  | 3    | 70   | 696  | 0    | 76   |

| Major/Minor          | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0      | 0      | 341    |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Critical Hdwy        | -      | -      | 4.16   |
| Critical Hdwy Stg 1  | -      | -      | -      |
| Critical Hdwy Stg 2  | -      | -      | -      |
| Follow-up Hdwy       | -      | -      | 2.238  |
| Pot Cap-1 Maneuver   | -      | -      | 1204   |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | -      | -      | 1204   |
| Mov Cap-2 Maneuver   | -      | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |

| Approach             | EB | WB  | NB  |
|----------------------|----|-----|-----|
| HCM Control Delay, s | 0  | 0.8 | 9.7 |
| HCM LOS              |    |     | A   |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | -     | 838   | -   | -   | 1204  | -   |
| HCM Lane V/C Ratio    | -     | 0.091 | -   | -   | 0.058 | -   |
| HCM Control Delay (s) | 0     | 9.7   | -   | -   | 8.2   | 0   |
| HCM Lane LOS          | A     | A     | -   | -   | A     | A   |
| HCM 95th %tile Q(veh) | -     | 0.3   | -   | -   | 0.2   | -   |

202: Route 732 (Black Rock Turnpike) & Judd Street  
Lanes, Volumes, Timings

2040 Background Conditions  
Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (vph)    | 20                                                                                | 68                                                                                | 76                                                                                | 357                                                                               | 394                                                                               | 30                                                                                |
| Future Volume (vph)     | 20                                                                                | 68                                                                                | 76                                                                                | 357                                                                               | 394                                                                               | 30                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Storage Length (ft)     | 0                                                                                 | 0                                                                                 | 25                                                                                |                                                                                   |                                                                                   | 0                                                                                 |
| Storage Lanes           | 1                                                                                 | 0                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 25                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.896                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.990                                                                             |                                                                                   |
| Flt Protected           | 0.989                                                                             |                                                                                   |                                                                                   | 0.991                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1817                                                                              | 0                                                                                 | 0                                                                                 | 3407                                                                              | 1791                                                                              | 0                                                                                 |
| Flt Permitted           | 0.989                                                                             |                                                                                   |                                                                                   | 0.991                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1817                                                                              | 0                                                                                 | 0                                                                                 | 3407                                                                              | 1791                                                                              | 0                                                                                 |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 586                                                                               |                                                                                   |                                                                                   | 395                                                                               | 218                                                                               |                                                                                   |
| Travel Time (s)         | 16.0                                                                              |                                                                                   |                                                                                   | 9.0                                                                               | 5.0                                                                               |                                                                                   |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |
| Heavy Vehicles (%)      | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                |
| Adj. Flow (vph)         | 25                                                                                | 85                                                                                | 83                                                                                | 388                                                                               | 428                                                                               | 33                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 110                                                                               | 0                                                                                 | 0                                                                                 | 471                                                                               | 461                                                                               | 0                                                                                 |
| Sign Control            | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 49.9% ICU Level of Service A

Analysis Period (min) 15

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 2.3  |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      | ↔    |      |      | ↔    | ↔    |      |
| Traffic Vol, veh/h       | 20   | 68   | 76   | 357  | 394  | 30   |
| Future Vol, veh/h        | 20   | 68   | 76   | 357  | 394  | 30   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 0    | -    | 25   | -    | -    | -    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 80   | 80   | 92   | 92   | 92   | 92   |
| Heavy Vehicles, %        | 5    | 5    | 5    | 5    | 5    | 5    |
| Mvmt Flow                | 25   | 85   | 83   | 388  | 428  | 33   |

| Major/Minor          | Minor2 | Major1 | Major2 |   |   |   |
|----------------------|--------|--------|--------|---|---|---|
| Conflicting Flow All | 804    | 445    | 461    | 0 | - | 0 |
| Stage 1              | 445    | -      | -      | - | - | - |
| Stage 2              | 359    | -      | -      | - | - | - |
| Critical Hdwy        | 6.675  | 6.275  | 4.175  | - | - | - |
| Critical Hdwy Stg 1  | 5.475  | -      | -      | - | - | - |
| Critical Hdwy Stg 2  | 5.875  | -      | -      | - | - | - |
| Follow-up Hdwy       | 3.5475 | 3.3475 | 2.2475 | - | - | - |
| Pot Cap-1 Maneuver   | 331    | 605    | 1080   | - | - | - |
| Stage 1              | 637    | -      | -      | - | - | - |
| Stage 2              | 671    | -      | -      | - | - | - |
| Platoon blocked, %   |        |        |        | - | - | - |
| Mov Cap-1 Maneuver   | 299    | 605    | 1080   | - | - | - |
| Mov Cap-2 Maneuver   | 299    | -      | -      | - | - | - |
| Stage 1              | 637    | -      | -      | - | - | - |
| Stage 2              | 605    | -      | -      | - | - | - |

| Approach             | EB   | NB  | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 14.4 | 1.8 | 0  |
| HCM LOS              | B    |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1080  | -   | 491   | -   | -   |
| HCM Lane V/C Ratio    | 0.076 | -   | 0.224 | -   | -   |
| HCM Control Delay (s) | 8.6   | 0.3 | 14.4  | -   | -   |
| HCM Lane LOS          | A     | A   | B     | -   | -   |
| HCM 95th %tile Q(veh) | 0.2   | -   | 0.9   | -   | -   |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/2040 Background Conditions

## Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 6                                                                                 | 0                                                                                 | 1                                                                                 | 46                                                                                | 0                                                                                 | 47                                                                                | 5                                                                                  | 662                                                                                 | 62                                                                                  | 58                                                                                  | 724                                                                                 | 5                                                                                   |
| Future Volume (vph)     | 6                                                                                 | 0                                                                                 | 1                                                                                 | 46                                                                                | 0                                                                                 | 47                                                                                | 5                                                                                  | 662                                                                                 | 62                                                                                  | 58                                                                                  | 724                                                                                 | 5                                                                                   |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                 | 13                                                                                  | 12                                                                                  | 12                                                                                  | 13                                                                                  | 12                                                                                  |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.985                                                                             |                                                                                   |                                                                                   | 0.932                                                                             |                                                                                   |                                                                                    | 0.989                                                                               |                                                                                     |                                                                                     | 0.999                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.957                                                                             |                                                                                   |                                                                                   | 0.976                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.996                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 1990                                                                              | 0                                                                                 | 0                                                                                 | 1920                                                                              | 0                                                                                 | 0                                                                                  | 1904                                                                                | 0                                                                                   | 0                                                                                   | 1915                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.833                                                                             |                                                                                   |                                                                                   | 0.839                                                                             |                                                                                   |                                                                                    | 0.996                                                                               |                                                                                     |                                                                                     | 0.909                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 1732                                                                              | 0                                                                                 | 0                                                                                 | 1651                                                                              | 0                                                                                 | 0                                                                                  | 1896                                                                                | 0                                                                                   | 0                                                                                   | 1748                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 43                                                                                |                                                                                   |                                                                                   | 56                                                                                |                                                                                   |                                                                                    | 14                                                                                  |                                                                                     |                                                                                     | 1                                                                                   |                                                                                     |
| Link Speed (mph)        |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 35                                                                                  |                                                                                     |                                                                                     | 35                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 378                                                                               |                                                                                   |                                                                                   | 442                                                                               |                                                                                   |                                                                                    | 1898                                                                                |                                                                                     |                                                                                     | 522                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 10.3                                                                              |                                                                                   |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                    | 37.0                                                                                |                                                                                     |                                                                                     | 10.2                                                                                |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.84                                                                              | 0.84                                                                              | 0.84                                                                              | 0.95                                                                               | 0.95                                                                                | 0.95                                                                                | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                |
| Adj. Flow (vph)         | 8                                                                                 | 0                                                                                 | 1                                                                                 | 55                                                                                | 0                                                                                 | 56                                                                                | 5                                                                                  | 697                                                                                 | 65                                                                                  | 62                                                                                  | 770                                                                                 | 5                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 9                                                                                 | 0                                                                                 | 0                                                                                 | 111                                                                               | 0                                                                                 | 0                                                                                  | 767                                                                                 | 0                                                                                   | 0                                                                                   | 837                                                                                 | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                    | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Permitted Phases        | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   | 2                                                                                  |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 4                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |                                                                                   | 2                                                                                  | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 15.0                                                                               | 15.0                                                                                |                                                                                     | 15.0                                                                                | 15.0                                                                                |                                                                                     |
| Minimum Split (s)       | 11.7                                                                              | 11.7                                                                              |                                                                                   | 11.7                                                                              | 11.7                                                                              |                                                                                   | 20.6                                                                               | 20.6                                                                                |                                                                                     | 20.6                                                                                | 20.6                                                                                |                                                                                     |
| Total Split (s)         | 17.7                                                                              | 17.7                                                                              |                                                                                   | 17.7                                                                              | 17.7                                                                              |                                                                                   | 48.6                                                                               | 48.6                                                                                |                                                                                     | 48.6                                                                                | 48.6                                                                                |                                                                                     |
| Total Split (%)         | 26.7%                                                                             | 26.7%                                                                             |                                                                                   | 26.7%                                                                             | 26.7%                                                                             |                                                                                   | 73.3%                                                                              | 73.3%                                                                               |                                                                                     | 73.3%                                                                               | 73.3%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.3                                                                               | 3.3                                                                               |                                                                                   | 3.3                                                                               | 3.3                                                                               |                                                                                   | 4.0                                                                                | 4.0                                                                                 |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.4                                                                               | 1.4                                                                               |                                                                                   | 1.4                                                                               | 1.4                                                                               |                                                                                   | 1.6                                                                                | 1.6                                                                                 |                                                                                     | 1.6                                                                                 | 1.6                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                    | 5.6                                                                                 |                                                                                     |                                                                                     | 5.6                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              |                                                                                   | Min                                                                                | Min                                                                                 |                                                                                     | Min                                                                                 | Min                                                                                 |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 8.0                                                                               |                                                                                   |                                                                                   | 8.0                                                                               |                                                                                   |                                                                                    | 34.8                                                                                |                                                                                     |                                                                                     | 34.8                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.16                                                                              |                                                                                   |                                                                                   | 0.16                                                                              |                                                                                   |                                                                                    | 0.71                                                                                |                                                                                     |                                                                                     | 0.71                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.03                                                                              |                                                                                   |                                                                                   | 0.35                                                                              |                                                                                   |                                                                                    | 0.57                                                                                |                                                                                     |                                                                                     | 0.67                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 0.1                                                                               |                                                                                   |                                                                                   | 15.5                                                                              |                                                                                   |                                                                                    | 7.1                                                                                 |                                                                                     |                                                                                     | 9.4                                                                                 |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 0.1                                                                               |                                                                                   |                                                                                   | 15.5                                                                              |                                                                                   |                                                                                    | 7.1                                                                                 |                                                                                     |                                                                                     | 9.4                                                                                 |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 0.1                                                                               |                                                                                   |                                                                                   | 15.5                                                                              |                                                                                   |                                                                                    | 7.1                                                                                 |                                                                                     |                                                                                     | 9.4                                                                                 |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 12                                                                                |                                                                                   |                                                                                    | 99                                                                                  |                                                                                     |                                                                                     | 126                                                                                 |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 53                                                                                |                                                                                   |                                                                                    | 215                                                                                 |                                                                                     |                                                                                     | 289                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 298                                                                               |                                                                                   |                                                                                   | 362                                                                               |                                                                                   |                                                                                    | 1818                                                                                |                                                                                     |                                                                                     | 442                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

## Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Base Capacity (vph)    |                                                                                   | 510                                                                               |                                                                                   |                                                                                   | 497                                                                               |                                                                                   |                                                                                    | 1653                                                                                |                                                                                     |                                                                                     | 1522                                                                                |                                                                                     |
| Starvation Cap Reductn |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   | 0.02                                                                              |                                                                                   |                                                                                   | 0.22                                                                              |                                                                                   |                                                                                    | 0.46                                                                                |                                                                                     |                                                                                     | 0.55                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 66.3

Actuated Cycle Length: 48.8

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 8.7

Intersection LOS: A

Intersection Capacity Utilization 93.0%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

|                                                                                      |                                                                                        |
|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
|  Ø2 |  Ø4 |
| 48.6 s                                                                               | 17.7 s                                                                                 |
|  Ø6 |  Ø8 |
| 48.6 s                                                                               | 17.7 s                                                                                 |



# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive Lanes, Volumes, Timings

2040 Background Conditions

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |      |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3   |
| Lane Configurations     |  |  |  |  |  |  |      |
| Traffic Volume (vph)    | 80                                                                                | 177                                                                               | 173                                                                               | 661                                                                               | 702                                                                               | 72                                                                                |      |
| Future Volume (vph)     | 80                                                                                | 177                                                                               | 173                                                                               | 661                                                                               | 702                                                                               | 72                                                                                |      |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |      |
| Lane Width (ft)         | 10                                                                                | 10                                                                                | 11                                                                                | 11                                                                                | 12                                                                                | 12                                                                                |      |
| Storage Length (ft)     | 0                                                                                 | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   | 0                                                                                 |      |
| Storage Lanes           | 1                                                                                 | 1                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |      |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              |      |
| Frt                     |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.986                                                                             |                                                                                   |      |
| Flt Protected           | 0.950                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |      |
| Satd. Flow (prot)       | 1636                                                                              | 1463                                                                              | 1694                                                                              | 1783                                                                              | 3456                                                                              | 0                                                                                 |      |
| Flt Permitted           | 0.950                                                                             |                                                                                   | 0.287                                                                             |                                                                                   |                                                                                   |                                                                                   |      |
| Satd. Flow (perm)       | 1636                                                                              | 1463                                                                              | 512                                                                               | 1783                                                                              | 3456                                                                              | 0                                                                                 |      |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |      |
| Satd. Flow (RTOR)       |                                                                                   | 216                                                                               |                                                                                   |                                                                                   | 13                                                                                |                                                                                   |      |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 35                                                                                |                                                                                   |      |
| Link Distance (ft)      | 445                                                                               |                                                                                   |                                                                                   | 510                                                                               | 341                                                                               |                                                                                   |      |
| Travel Time (s)         | 12.1                                                                              |                                                                                   |                                                                                   | 11.6                                                                              | 6.6                                                                               |                                                                                   |      |
| Peak Hour Factor        | 0.82                                                                              | 0.82                                                                              | 0.86                                                                              | 0.86                                                                              | 0.97                                                                              | 0.97                                                                              |      |
| Heavy Vehicles (%)      | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                |      |
| Adj. Flow (vph)         | 98                                                                                | 216                                                                               | 201                                                                               | 769                                                                               | 724                                                                               | 74                                                                                |      |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Group Flow (vph)   | 98                                                                                | 216                                                                               | 201                                                                               | 769                                                                               | 798                                                                               | 0                                                                                 |      |
| Turn Type               | Prot                                                                              | Perm                                                                              | pm+pt                                                                             | NA                                                                                | NA                                                                                |                                                                                   |      |
| Protected Phases        | 4                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 | 2                                                                                 |                                                                                   | 3    |
| Permitted Phases        |                                                                                   | 4                                                                                 | 6                                                                                 |                                                                                   |                                                                                   |                                                                                   |      |
| Detector Phase          | 4                                                                                 | 4                                                                                 | 1                                                                                 | 6                                                                                 | 2                                                                                 |                                                                                   |      |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               | 5.0                                                                               | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0  |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              | 9.2                                                                               | 21.9                                                                              | 21.9                                                                              |                                                                                   | 22.0 |
| Total Split (s)         | 21.9                                                                              | 21.9                                                                              | 9.2                                                                               | 31.1                                                                              | 21.9                                                                              |                                                                                   | 22.0 |
| Total Split (%)         | 29.2%                                                                             | 29.2%                                                                             | 12.3%                                                                             | 41.5%                                                                             | 29.2%                                                                             |                                                                                   | 29%  |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               | 3.2                                                                               | 4.9                                                                               | 4.9                                                                               |                                                                                   | 4.0  |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 2.0                                                                               | 2.0                                                                               |                                                                                   | 0.0  |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               | 4.2                                                                               | 6.9                                                                               | 6.9                                                                               |                                                                                   |      |
| Lead/Lag                | Lag                                                                               | Lag                                                                               | Lead                                                                              |                                                                                   | Lag                                                                               |                                                                                   | Lead |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               |                                                                                   | Yes  |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                             | C-Max                                                                             |                                                                                   | None |
| Act Effect Green (s)    | 10.1                                                                              | 10.1                                                                              | 56.7                                                                              | 54.0                                                                              | 39.9                                                                              |                                                                                   |      |
| Actuated g/C Ratio      | 0.13                                                                              | 0.13                                                                              | 0.76                                                                              | 0.72                                                                              | 0.53                                                                              |                                                                                   |      |
| v/c Ratio               | 0.45                                                                              | 0.56                                                                              | 0.37                                                                              | 0.60                                                                              | 0.43                                                                              |                                                                                   |      |
| Control Delay           | 36.2                                                                              | 10.8                                                                              | 7.3                                                                               | 15.2                                                                              | 11.9                                                                              |                                                                                   |      |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Total Delay             | 36.2                                                                              | 10.8                                                                              | 7.3                                                                               | 15.2                                                                              | 11.9                                                                              |                                                                                   |      |
| LOS                     | D                                                                                 | B                                                                                 | A                                                                                 | B                                                                                 | B                                                                                 |                                                                                   |      |
| Approach Delay          | 18.7                                                                              |                                                                                   |                                                                                   | 13.5                                                                              | 11.9                                                                              |                                                                                   |      |
| Approach LOS            | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 | B                                                                                 |                                                                                   |      |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive Lanes, Volumes, Timings

2040 Background Conditions  
Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |    |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3 |
| Queue Length 50th (ft)  | 43                                                                                | 0                                                                                 | 31                                                                                | 300                                                                               | 101                                                                               |                                                                                   |    |
| Queue Length 95th (ft)  | 75                                                                                | 41                                                                                | 66                                                                                | 439                                                                               | 175                                                                               |                                                                                   |    |
| Internal Link Dist (ft) | 365                                                                               |                                                                                   |                                                                                   | 430                                                                               | 261                                                                               |                                                                                   |    |
| Turn Bay Length (ft)    |                                                                                   | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   |                                                                                   |    |
| Base Capacity (vph)     | 390                                                                               | 513                                                                               | 542                                                                               | 1283                                                                              | 1845                                                                              |                                                                                   |    |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Reduced v/c Ratio       | 0.25                                                                              | 0.42                                                                              | 0.37                                                                              | 0.60                                                                              | 0.43                                                                              |                                                                                   |    |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 22 (29%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 13.7

Intersection LOS: B

Intersection Capacity Utilization 51.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

|                                                                                            |                                                                                            |                                                                                        |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø3 |  Ø4 |
| 9.2 s                                                                                      | 21.9 s                                                                                     | 22 s                                                                                   | 21.9 s                                                                                   |
|  Ø6 (R) |                                                                                            |                                                                                        |                                                                                          |
| 31.1 s                                                                                     |                                                                                            |                                                                                        |                                                                                          |

# 103: Route 58 (Black Rock Turnpike) & Brookside Drive Lanes, Volumes, Timings

2040 Background Conditions

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (vph)    | 68                                                                                | 49                                                                                | 54                                                                                | 767                                                                               | 792                                                                               | 89                                                                                |
| Future Volume (vph)     | 68                                                                                | 49                                                                                | 54                                                                                | 767                                                                               | 792                                                                               | 89                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              |
| Frt                     | 0.943                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.985                                                                             |                                                                                   |
| Flt Protected           | 0.972                                                                             |                                                                                   |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1916                                                                              | 0                                                                                 | 0                                                                                 | 3494                                                                              | 3452                                                                              | 0                                                                                 |
| Flt Permitted           | 0.972                                                                             |                                                                                   |                                                                                   | 0.831                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1916                                                                              | 0                                                                                 | 0                                                                                 | 2913                                                                              | 3452                                                                              | 0                                                                                 |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |
| Satd. Flow (RTOR)       | 48                                                                                |                                                                                   |                                                                                   |                                                                                   | 19                                                                                |                                                                                   |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 347                                                                               |                                                                                   |                                                                                   | 293                                                                               | 336                                                                               |                                                                                   |
| Travel Time (s)         | 9.5                                                                               |                                                                                   |                                                                                   | 6.7                                                                               | 7.6                                                                               |                                                                                   |
| Peak Hour Factor        | 0.86                                                                              | 0.86                                                                              | 0.83                                                                              | 0.83                                                                              | 0.98                                                                              | 0.98                                                                              |
| Heavy Vehicles (%)      | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                |
| Adj. Flow (vph)         | 79                                                                                | 57                                                                                | 65                                                                                | 924                                                                               | 808                                                                               | 91                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 136                                                                               | 0                                                                                 | 0                                                                                 | 989                                                                               | 899                                                                               | 0                                                                                 |
| Turn Type               | Prot                                                                              |                                                                                   | pm+pt                                                                             | NA                                                                                | NA                                                                                |                                                                                   |
| Protected Phases        | 4                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                 | 6                                                                                 |                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Detector Phase          | 4                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                 | 6                                                                                 |                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)     | 9.0                                                                               |                                                                                   | 3.0                                                                               | 15.0                                                                              | 15.0                                                                              |                                                                                   |
| Minimum Split (s)       | 13.0                                                                              |                                                                                   | 8.9                                                                               | 20.4                                                                              | 20.4                                                                              |                                                                                   |
| Total Split (s)         | 25.0                                                                              |                                                                                   | 14.0                                                                              | 50.0                                                                              | 36.0                                                                              |                                                                                   |
| Total Split (%)         | 33.3%                                                                             |                                                                                   | 18.7%                                                                             | 66.7%                                                                             | 48.0%                                                                             |                                                                                   |
| Yellow Time (s)         | 3.0                                                                               |                                                                                   | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               |                                                                                   |
| All-Red Time (s)        | 1.0                                                                               |                                                                                   | 1.7                                                                               | 1.2                                                                               | 1.2                                                                               |                                                                                   |
| Lost Time Adjust (s)    | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |
| Total Lost Time (s)     | 4.0                                                                               |                                                                                   |                                                                                   | 5.4                                                                               | 5.4                                                                               |                                                                                   |
| Lead/Lag                |                                                                                   |                                                                                   | Lag                                                                               |                                                                                   | Lead                                                                              |                                                                                   |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   | Yes                                                                               |                                                                                   |
| Recall Mode             | None                                                                              |                                                                                   | None                                                                              | C-Max                                                                             | C-Max                                                                             |                                                                                   |
| Act Effect Green (s)    | 9.7                                                                               |                                                                                   |                                                                                   | 59.5                                                                              | 59.5                                                                              |                                                                                   |
| Actuated g/C Ratio      | 0.13                                                                              |                                                                                   |                                                                                   | 0.79                                                                              | 0.79                                                                              |                                                                                   |
| v/c Ratio               | 0.47                                                                              |                                                                                   |                                                                                   | 0.43                                                                              | 0.33                                                                              |                                                                                   |
| Control Delay           | 25.4                                                                              |                                                                                   |                                                                                   | 2.9                                                                               | 1.4                                                                               |                                                                                   |
| Queue Delay             | 0.0                                                                               |                                                                                   |                                                                                   | 0.1                                                                               | 0.0                                                                               |                                                                                   |
| Total Delay             | 25.4                                                                              |                                                                                   |                                                                                   | 3.0                                                                               | 1.4                                                                               |                                                                                   |
| LOS                     | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |
| Approach Delay          | 25.4                                                                              |                                                                                   |                                                                                   | 3.0                                                                               | 1.4                                                                               |                                                                                   |
| Approach LOS            | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |
| Queue Length 50th (ft)  | 38                                                                                |                                                                                   |                                                                                   | 39                                                                                | 9                                                                                 |                                                                                   |
| Queue Length 95th (ft)  | 80                                                                                |                                                                                   |                                                                                   | 63                                                                                | 10                                                                                |                                                                                   |
| Internal Link Dist (ft) | 267                                                                               |                                                                                   |                                                                                   | 213                                                                               | 256                                                                               |                                                                                   |

# 103: Route 58 (Black Rock Turnpike) & Brookside Drive Lanes, Volumes, Timings

2040 Background Conditions  
Timing Plan: Weekday Midday P

|                        |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Turn Bay Length (ft)   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Base Capacity (vph)    | 571                                                                               |                                                                                   |                                                                                   | 2312                                                                              | 2744                                                                              |                                                                                   |
| Starvation Cap Reductn | 0                                                                                 |                                                                                   |                                                                                   | 306                                                                               | 0                                                                                 |                                                                                   |
| Spillback Cap Reductn  | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 116                                                                               |                                                                                   |
| Storage Cap Reductn    | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |
| Reduced v/c Ratio      | 0.24                                                                              |                                                                                   |                                                                                   | 0.49                                                                              | 0.34                                                                              |                                                                                   |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 45 (60%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.47

Intersection Signal Delay: 3.8

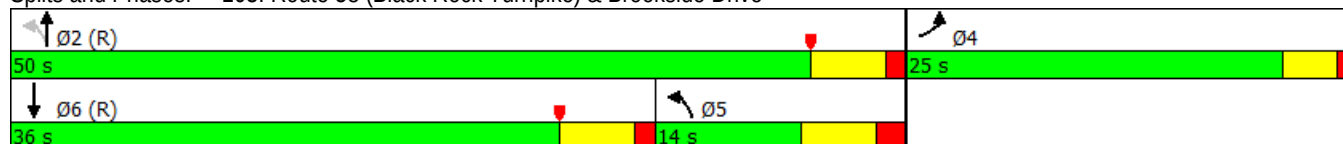
Intersection LOS: A

Intersection Capacity Utilization 67.3%

ICU Level of Service C

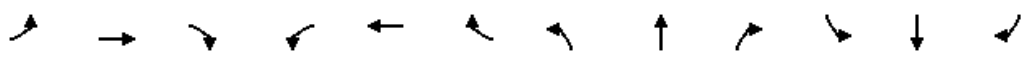
Analysis Period (min) 15

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive



# 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairview Road Conditions Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |       |       |       |       |       |       |       |      |       |       |      |
|-------------------------|------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|------|
| Lane Group              | EBL                                                                                | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
| Lane Configurations     |                                                                                    |       |       |       |       |       |       |       |      |       |       |      |
| Traffic Volume (vph)    | 15                                                                                 | 3     | 33    | 65    | 4     | 149   | 31    | 674   | 54   | 88    | 732   | 22   |
| Future Volume (vph)     | 15                                                                                 | 3     | 33    | 65    | 4     | 149   | 31    | 674   | 54   | 88    | 732   | 22   |
| Ideal Flow (vphpl)      | 1900                                                                               | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12                                                                                 | 12    | 12    | 12    | 12    | 11    | 12    | 11    | 12   | 12    | 11    | 12   |
| Storage Length (ft)     | 0                                                                                  |       | 0     | 0     |       | 75    | 0     |       | 0    | 0     |       | 0    |
| Storage Lanes           | 0                                                                                  |       | 1     | 0     |       | 1     | 0     |       | 0    | 0     |       | 0    |
| Taper Length (ft)       | 25                                                                                 |       |       | 25    |       |       | 25    |       |      | 25    |       |      |
| Lane Util. Factor       | 1.00                                                                               | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 0.95  | 0.95  | 0.95 | 0.95  | 0.95  | 0.95 |
| Frt                     |                                                                                    |       | 0.850 |       |       | 0.850 |       | 0.989 |      |       | 0.996 |      |
| Flt Protected           |                                                                                    | 0.960 |       |       | 0.955 |       |       | 0.998 |      |       | 0.995 |      |
| Satd. Flow (prot)       | 0                                                                                  | 1788  | 1583  | 0     | 1779  | 1531  | 0     | 3377  | 0    | 0     | 3391  | 0    |
| Flt Permitted           |                                                                                    | 0.801 |       |       | 0.725 |       |       | 0.893 |      |       | 0.768 |      |
| Satd. Flow (perm)       | 0                                                                                  | 1492  | 1583  | 0     | 1350  | 1531  | 0     | 3022  | 0    | 0     | 2617  | 0    |
| Right Turn on Red       |                                                                                    |       | Yes   |       |       | No    |       |       | Yes  |       |       | Yes  |
| Satd. Flow (RTOR)       |                                                                                    |       | 128   |       |       |       |       | 13    |      |       | 6     |      |
| Link Speed (mph)        |                                                                                    | 30    |       |       | 25    |       |       | 30    |      |       | 30    |      |
| Link Distance (ft)      |                                                                                    | 87    |       |       | 499   |       |       | 713   |      |       | 293   |      |
| Travel Time (s)         |                                                                                    | 2.0   |       |       | 13.6  |       |       | 16.2  |      |       | 6.7   |      |
| Peak Hour Factor        | 0.80                                                                               | 0.80  | 0.80  | 0.80  | 0.80  | 0.80  | 0.89  | 0.89  | 0.89 | 0.96  | 0.96  | 0.96 |
| Adj. Flow (vph)         | 19                                                                                 | 4     | 41    | 81    | 5     | 186   | 35    | 757   | 61   | 92    | 763   | 23   |
| Shared Lane Traffic (%) |                                                                                    |       |       |       |       |       |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 0                                                                                  | 23    | 41    | 0     | 86    | 186   | 0     | 853   | 0    | 0     | 878   | 0    |
| Turn Type               | Perm                                                                               | NA    | Perm  | Perm  | NA    | Perm  | Perm  | NA    |      | pm+pt | NA    |      |
| Protected Phases        |                                                                                    | 4     |       |       | 8     |       |       | 2     |      | 1     | 6     |      |
| Permitted Phases        | 4                                                                                  |       | 4     | 8     |       | 8     | 2     |       |      | 6     |       |      |
| Detector Phase          | 4                                                                                  | 4     | 4     | 8     | 8     | 8     | 2     | 2     |      | 1     | 6     |      |
| Switch Phase            |                                                                                    |       |       |       |       |       |       |       |      |       |       |      |
| Minimum Initial (s)     | 9.0                                                                                | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 15.0  | 15.0  |      | 3.0   | 15.0  |      |
| Minimum Split (s)       | 13.0                                                                               | 13.0  | 13.0  | 13.0  | 13.0  | 13.0  | 20.3  | 20.3  |      | 9.5   | 20.3  |      |
| Total Split (s)         | 25.0                                                                               | 25.0  | 25.0  | 25.0  | 25.0  | 25.0  | 36.0  | 36.0  |      | 14.0  | 50.0  |      |
| Total Split (%)         | 33.3%                                                                              | 33.3% | 33.3% | 33.3% | 33.3% | 33.3% | 48.0% | 48.0% |      | 18.7% | 66.7% |      |
| Yellow Time (s)         | 3.0                                                                                | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 4.3   | 4.3   |      | 4.3   | 4.3   |      |
| All-Red Time (s)        | 1.0                                                                                | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |      | 2.2   | 1.0   |      |
| Lost Time Adjust (s)    |                                                                                    | 0.0   | 0.0   |       | 0.0   | 0.0   |       | 0.0   |      |       | 0.0   |      |
| Total Lost Time (s)     |                                                                                    | 4.0   | 4.0   |       | 4.0   | 4.0   |       | 5.3   |      |       | 5.3   |      |
| Lead/Lag                |                                                                                    |       |       |       |       |       | Lead  | Lead  |      | Lag   |       |      |
| Lead-Lag Optimize?      |                                                                                    |       |       |       |       |       | Yes   | Yes   |      | Yes   |       |      |
| Recall Mode             | None                                                                               | None  | None  | None  | None  | None  | C-Max | C-Max |      | None  | C-Max |      |
| Act Effct Green (s)     |                                                                                    | 13.7  | 13.7  |       | 13.7  | 13.7  |       | 52.0  |      |       | 52.0  |      |
| Actuated g/C Ratio      |                                                                                    | 0.18  | 0.18  |       | 0.18  | 0.18  |       | 0.69  |      |       | 0.69  |      |
| v/c Ratio               |                                                                                    | 0.08  | 0.10  |       | 0.35  | 0.67  |       | 0.41  |      |       | 0.48  |      |
| Control Delay           |                                                                                    | 23.9  | 0.5   |       | 29.3  | 39.7  |       | 6.1   |      |       | 4.5   |      |
| Queue Delay             |                                                                                    | 0.0   | 0.0   |       | 0.0   | 0.0   |       | 0.0   |      |       | 0.1   |      |
| Total Delay             |                                                                                    | 23.9  | 0.5   |       | 29.3  | 39.7  |       | 6.1   |      |       | 4.6   |      |
| LOS                     |                                                                                    | C     | A     |       | C     | D     |       | A     |      |       | A     |      |
| Approach Delay          |                                                                                    | 8.9   |       |       | 36.4  |       |       | 6.1   |      |       | 4.6   |      |
| Approach LOS            |                                                                                    | A     |       |       | D     |       |       | A     |      |       | A     |      |
| Queue Length 50th (ft)  |                                                                                    | 9     | 0     |       | 35    | 82    |       | 71    |      |       | 15    |      |



# 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road Conditions Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 22                                                                                | 0                                                                                 |                                                                                   | 60                                                                                | 115                                                                               |                                                                                    | 131                                                                                 |                                                                                     |                                                                                     | 211                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 7                                                                                 |                                                                                   |                                                                                   | 419                                                                               |                                                                                   |                                                                                    | 633                                                                                 |                                                                                     |                                                                                     | 213                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 75                                                                                |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 417                                                                               | 535                                                                               |                                                                                   | 378                                                                               | 428                                                                               |                                                                                    | 2098                                                                                |                                                                                     |                                                                                     | 1815                                                                                |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 154                                                                                 |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.06                                                                              | 0.08                                                                              |                                                                                   | 0.23                                                                              | 0.43                                                                              |                                                                                    | 0.41                                                                                |                                                                                     |                                                                                     | 0.53                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 48 (64%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 9.5

Intersection LOS: A

Intersection Capacity Utilization 67.4%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road

|                                                                                            |                                                                                          |                                                                                         |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|  Ø2 (R)  |  Ø1    |  Ø4 |
| 36 s                                                                                       | 14 s                                                                                     | 25 s                                                                                    |
|  Ø6 (R) |  Ø8 |                                                                                         |
| 50 s                                                                                       |                                                                                          | 25 s                                                                                    |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Background Conditions

## Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |       |      |       |       |      |       |       |      |       |       |      |
|-------------------------|------------------------------------------------------------------------------------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|
| Lane Group              | EBL                                                                                | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
| Lane Configurations     |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Traffic Volume (vph)    | 79                                                                                 | 563   | 193  | 126   | 585   | 109  | 207   | 204   | 133  | 178   | 196   | 55   |
| Future Volume (vph)     | 79                                                                                 | 563   | 193  | 126   | 585   | 109  | 207   | 204   | 133  | 178   | 196   | 55   |
| Ideal Flow (vphpl)      | 1900                                                                               | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 11                                                                                 | 11    | 12   | 11    | 12    | 12   | 11    | 11    | 12   | 12    | 12    | 12   |
| Storage Length (ft)     | 200                                                                                |       | 0    | 175   |       | 0    | 210   |       | 0    | 170   |       | 0    |
| Storage Lanes           | 1                                                                                  |       | 0    | 1     |       | 0    | 1     |       | 0    | 1     |       | 0    |
| Taper Length (ft)       | 85                                                                                 |       |      | 75    |       |      | 100   |       |      | 100   |       |      |
| Lane Util. Factor       | 1.00                                                                               | 0.95  | 0.95 | 1.00  | 0.95  | 0.95 | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 |
| Frt                     |                                                                                    | 0.962 |      |       | 0.976 |      |       | 0.941 |      |       | 0.967 |      |
| Flt Protected           | 0.950                                                                              |       |      | 0.950 |       |      | 0.950 |       |      | 0.950 |       |      |
| Satd. Flow (prot)       | 1711                                                                               | 3291  | 0    | 1711  | 3454  | 0    | 1711  | 1694  | 0    | 1770  | 1801  | 0    |
| Flt Permitted           | 0.950                                                                              |       |      | 0.950 |       |      | 0.419 |       |      | 0.322 |       |      |
| Satd. Flow (perm)       | 1711                                                                               | 3291  | 0    | 1711  | 3454  | 0    | 754   | 1694  | 0    | 600   | 1801  | 0    |
| Right Turn on Red       |                                                                                    |       | Yes  |       |       | Yes  |       |       | Yes  |       |       | No   |
| Satd. Flow (RTOR)       |                                                                                    | 29    |      |       | 13    |      |       | 19    |      |       |       |      |
| Link Speed (mph)        |                                                                                    | 30    |      |       | 30    |      |       | 30    |      |       | 25    |      |
| Link Distance (ft)      |                                                                                    | 436   |      |       | 368   |      |       | 438   |      |       | 355   |      |
| Travel Time (s)         |                                                                                    | 9.9   |      |       | 8.4   |      |       | 10.0  |      |       | 9.7   |      |
| Peak Hour Factor        | 0.91                                                                               | 0.91  | 0.91 | 0.93  | 0.93  | 0.93 | 0.96  | 0.96  | 0.96 | 0.96  | 0.96  | 0.96 |
| Adj. Flow (vph)         | 87                                                                                 | 619   | 212  | 135   | 629   | 117  | 216   | 213   | 139  | 185   | 204   | 57   |
| Shared Lane Traffic (%) |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 87                                                                                 | 831   | 0    | 135   | 746   | 0    | 216   | 352   | 0    | 185   | 261   | 0    |
| Turn Type               | Prot                                                                               | NA    |      | Prot  | NA    |      | pm+pt | NA    |      | pm+pt | NA    |      |
| Protected Phases        | 5                                                                                  | 2     |      | 1     | 6     |      | 7     | 4     |      | 3     | 8     |      |
| Permitted Phases        |                                                                                    |       |      |       |       |      | 4     |       |      | 8     |       |      |
| Detector Phase          | 5                                                                                  | 2     |      | 1     | 6     |      | 7     | 4     |      | 3     | 8     |      |
| Switch Phase            |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Minimum Initial (s)     | 5.0                                                                                | 15.0  |      | 5.0   | 15.0  |      | 5.0   | 10.0  |      | 5.0   | 10.0  |      |
| Minimum Split (s)       | 9.7                                                                                | 21.6  |      | 9.7   | 21.6  |      | 9.3   | 16.8  |      | 9.3   | 16.8  |      |
| Total Split (s)         | 17.7                                                                               | 41.6  |      | 17.7  | 41.6  |      | 22.3  | 36.8  |      | 22.3  | 36.8  |      |
| Total Split (%)         | 11.7%                                                                              | 27.5% |      | 11.7% | 27.5% |      | 14.7% | 24.3% |      | 14.7% | 24.3% |      |
| Yellow Time (s)         | 3.0                                                                                | 4.1   |      | 3.0   | 4.1   |      | 3.3   | 4.4   |      | 3.3   | 4.4   |      |
| All-Red Time (s)        | 1.7                                                                                | 2.5   |      | 1.7   | 2.5   |      | 1.0   | 2.4   |      | 1.0   | 2.4   |      |
| Lost Time Adjust (s)    | 0.0                                                                                | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      |
| Total Lost Time (s)     | 4.7                                                                                | 6.6   |      | 4.7   | 6.6   |      | 4.3   | 6.8   |      | 4.3   | 6.8   |      |
| Lead/Lag                | Lead                                                                               | Lag   |      | Lead  | Lag   |      | Lead  | Lag   |      | Lead  | Lag   |      |
| Lead-Lag Optimize?      | Yes                                                                                | Yes   |      | Yes   | Yes   |      | Yes   | Yes   |      | Yes   | Yes   |      |
| Recall Mode             | None                                                                               | Min   |      | None  | Min   |      | None  | None  |      | None  | None  |      |
| Act Effct Green (s)     | 9.8                                                                                | 35.1  |      | 12.7  | 37.9  |      | 46.3  | 29.9  |      | 43.4  | 28.5  |      |
| Actuated g/C Ratio      | 0.09                                                                               | 0.31  |      | 0.11  | 0.34  |      | 0.41  | 0.27  |      | 0.39  | 0.25  |      |
| v/c Ratio               | 0.58                                                                               | 0.80  |      | 0.70  | 0.64  |      | 0.50  | 0.76  |      | 0.51  | 0.57  |      |
| Control Delay           | 65.5                                                                               | 41.3  |      | 68.9  | 34.9  |      | 24.8  | 48.3  |      | 25.5  | 43.2  |      |
| Queue Delay             | 0.0                                                                                | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      |
| Total Delay             | 65.5                                                                               | 41.3  |      | 68.9  | 34.9  |      | 24.8  | 48.3  |      | 25.5  | 43.2  |      |
| LOS                     | E                                                                                  | D     |      | E     | C     |      | C     | D     |      | C     | D     |      |
| Approach Delay          |                                                                                    | 43.6  |      |       | 40.1  |      |       | 39.4  |      |       | 35.8  |      |
| Approach LOS            |                                                                                    | D     |      |       | D     |      |       | D     |      |       | D     |      |
| Queue Length 50th (ft)  | 61                                                                                 | 279   |      | 95    | 234   |      | 99    | 222   |      | 83    | 166   |      |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Background Conditions Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

| Lane Group              | Ø9   |
|-------------------------|------|
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 33.0 |
| Total Split (s)         | 33.0 |
| Total Split (%)         | 22%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Background Conditions Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  | 117                                                                               | 383                                                                               |                                                                                   | #195                                                                              | 335                                                                               |                                                                                   | 154                                                                                | #382                                                                                |                                                                                     | 132                                                                                 | 264                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 356                                                                               |                                                                                   |                                                                                   | 288                                                                               |                                                                                   |                                                                                    | 358                                                                                 |                                                                                     |                                                                                     | 275                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 200                                                                               |                                                                                   |                                                                                   | 175                                                                               |                                                                                   |                                                                                   | 210                                                                                |                                                                                     |                                                                                     | 170                                                                                 |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 197                                                                               | 1045                                                                              |                                                                                   | 197                                                                               | 1171                                                                              |                                                                                   | 477                                                                                | 466                                                                                 |                                                                                     | 442                                                                                 | 480                                                                                 |                                                                                     |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       | 0.44                                                                              | 0.80                                                                              |                                                                                   | 0.69                                                                              | 0.64                                                                              |                                                                                   | 0.45                                                                               | 0.76                                                                                |                                                                                     | 0.42                                                                                | 0.54                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 151.4

Actuated Cycle Length: 112.5

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 40.4

Intersection LOS: D

Intersection Capacity Utilization 76.1%

ICU Level of Service D

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)

|                                                                                        |                                                                                        |                                                                                        |                                                                                         |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø9 |  Ø3 |  Ø4 |
| 17.7 s                                                                                 | 41.6 s                                                                                 | 33 s                                                                                   | 22.3 s                                                                                  | 36.8 s                                                                                   |
|  Ø5 |  Ø6 |                                                                                        |  Ø7 |  Ø8 |
| 17.7 s                                                                                 | 41.6 s                                                                                 |                                                                                        | 22.3 s                                                                                  | 36.8 s                                                                                   |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø9 |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |



# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway/2040 Back St (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |  |
| Traffic Volume (vph)    | 72                                                                                | 677                                                                               | 32                                                                                | 60                                                                                | 613                                                                               | 69                                                                                | 163                                                                                | 12                                                                                  | 82                                                                                  | 54                                                                                  | 13                                                                                  | 33                                                                                  |
| Future Volume (vph)     | 72                                                                                | 677                                                                               | 32                                                                                | 60                                                                                | 613                                                                               | 69                                                                                | 163                                                                                | 12                                                                                  | 82                                                                                  | 54                                                                                  | 13                                                                                  | 33                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                 | 13                                                                                  | 13                                                                                  | 12                                                                                  | 13                                                                                  | 13                                                                                  |
| Storage Length (ft)     | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 25                                                                                  | 0                                                                                   |                                                                                     | 25                                                                                  |
| Storage Lanes           | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 1                                                                                   | 0                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)       | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.994                                                                             |                                                                                   |                                                                                   | 0.986                                                                             |                                                                                   |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected           |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                    | 0.956                                                                               |                                                                                     |                                                                                     | 0.961                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3351                                                                              | 0                                                                                 | 0                                                                                 | 3327                                                                              | 0                                                                                 | 0                                                                                  | 1822                                                                                | 1620                                                                                | 0                                                                                   | 1832                                                                                | 1620                                                                                |
| Flt Permitted           |                                                                                   | 0.795                                                                             |                                                                                   |                                                                                   | 0.811                                                                             |                                                                                   |                                                                                    | 0.686                                                                               |                                                                                     |                                                                                     | 0.703                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 2677                                                                              | 0                                                                                 | 0                                                                                 | 2709                                                                              | 0                                                                                 | 0                                                                                  | 1308                                                                                | 1620                                                                                | 0                                                                                   | 1340                                                                                | 1620                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 7                                                                                 |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                    |                                                                                     | 157                                                                                 |                                                                                     |                                                                                     | 157                                                                                 |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 442                                                                               |                                                                                   |                                                                                   | 502                                                                               |                                                                                   |                                                                                    | 142                                                                                 |                                                                                     |                                                                                     | 135                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                    | 3.9                                                                                 |                                                                                     |                                                                                     | 3.7                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.95                                                                               | 0.95                                                                                | 0.95                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                |
| Heavy Vehicles (%)      | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                 | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  |
| Adj. Flow (vph)         | 79                                                                                | 744                                                                               | 35                                                                                | 62                                                                                | 632                                                                               | 71                                                                                | 172                                                                                | 13                                                                                  | 86                                                                                  | 61                                                                                  | 15                                                                                  | 38                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 858                                                                               | 0                                                                                 | 0                                                                                 | 765                                                                               | 0                                                                                 | 0                                                                                  | 185                                                                                 | 86                                                                                  | 0                                                                                   | 76                                                                                  | 38                                                                                  |
| Turn Type               | pm+pt                                                                             | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  | Perm                                                                                | Perm                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases        | 1                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                  |                                                                                     | 4                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   |
| Detector Phase          | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                  | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0                                                                                | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |
| Minimum Split (s)       | 9.0                                                                               | 20.8                                                                              |                                                                                   | 20.8                                                                              | 20.8                                                                              |                                                                                   | 11.0                                                                               | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                |
| Total Split (s)         | 9.0                                                                               | 39.0                                                                              |                                                                                   | 30.0                                                                              | 30.0                                                                              |                                                                                   | 14.0                                                                               | 14.0                                                                                | 14.0                                                                                | 14.0                                                                                | 14.0                                                                                | 14.0                                                                                |
| Total Split (%)         | 12.0%                                                                             | 52.0%                                                                             |                                                                                   | 40.0%                                                                             | 40.0%                                                                             |                                                                                   | 18.7%                                                                              | 18.7%                                                                               | 18.7%                                                                               | 18.7%                                                                               | 18.7%                                                                               | 18.7%                                                                               |
| Yellow Time (s)         | 3.0                                                                               | 4.3                                                                               |                                                                                   | 4.3                                                                               | 4.3                                                                               |                                                                                   | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| All-Red Time (s)        | 1.0                                                                               | 1.5                                                                               |                                                                                   | 1.5                                                                               | 1.5                                                                               |                                                                                   | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     |                                                                                   | 5.8                                                                               |                                                                                   |                                                                                   | 5.8                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 | 4.0                                                                                 |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |
| Lead/Lag                | Lead                                                                              |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               |                                                                                   | Lag                                                                                | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode             | Min                                                                               | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Act Effect Green (s)    |                                                                                   | 46.6                                                                              |                                                                                   |                                                                                   | 37.1                                                                              |                                                                                   |                                                                                    | 18.6                                                                                | 18.6                                                                                |                                                                                     | 18.6                                                                                | 18.6                                                                                |
| Actuated g/C Ratio      |                                                                                   | 0.62                                                                              |                                                                                   |                                                                                   | 0.49                                                                              |                                                                                   |                                                                                    | 0.25                                                                                | 0.25                                                                                |                                                                                     | 0.25                                                                                | 0.25                                                                                |
| v/c Ratio               |                                                                                   | 0.51                                                                              |                                                                                   |                                                                                   | 0.57                                                                              |                                                                                   |                                                                                    | 0.57                                                                                | 0.17                                                                                |                                                                                     | 0.23                                                                                | 0.07                                                                                |
| Control Delay           |                                                                                   | 8.9                                                                               |                                                                                   |                                                                                   | 8.7                                                                               |                                                                                   |                                                                                    | 32.3                                                                                | 1.2                                                                                 |                                                                                     | 24.2                                                                                | 0.3                                                                                 |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             |                                                                                   | 8.9                                                                               |                                                                                   |                                                                                   | 8.7                                                                               |                                                                                   |                                                                                    | 32.3                                                                                | 1.2                                                                                 |                                                                                     | 24.2                                                                                | 0.3                                                                                 |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   | A                                                                                   |                                                                                     | C                                                                                   | A                                                                                   |
| Approach Delay          |                                                                                   | 8.9                                                                               |                                                                                   |                                                                                   | 8.7                                                                               |                                                                                   |                                                                                    | 22.4                                                                                |                                                                                     |                                                                                     | 16.2                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway 2040 Backgr (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

| Lane Group              | Ø3   |
|-------------------------|------|
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Heavy Vehicles (%)      |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 3    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 22.0 |
| Total Split (s)         | 22.0 |
| Total Split (%)         | 29%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                | Lead |
| Lead-Lag Optimize?      | Yes  |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  |                                                                                   | 92                                                                                |                                                                                   |                                                                                   | 57                                                                                |                                                                                   |                                                                                    | 76                                                                                  | 0                                                                                   |                                                                                     | 28                                                                                  | 0                                                                                   |
| Queue Length 95th (ft)  |                                                                                   | 138                                                                               |                                                                                   |                                                                                   | 73                                                                                |                                                                                   |                                                                                    | 135                                                                                 | 5                                                                                   |                                                                                     | 59                                                                                  | 0                                                                                   |
| Internal Link Dist (ft) |                                                                                   | 362                                                                               |                                                                                   |                                                                                   | 422                                                                               |                                                                                   |                                                                                    | 62                                                                                  |                                                                                     |                                                                                     | 55                                                                                  |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |
| Base Capacity (vph)     |                                                                                   | 1699                                                                              |                                                                                   |                                                                                   | 1347                                                                              |                                                                                   |                                                                                    | 324                                                                                 | 519                                                                                 |                                                                                     | 332                                                                                 | 519                                                                                 |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       |                                                                                   | 0.51                                                                              |                                                                                   |                                                                                   | 0.57                                                                              |                                                                                   |                                                                                    | 0.57                                                                                | 0.17                                                                                |                                                                                     | 0.23                                                                                | 0.07                                                                                |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 19 (25%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.57

Intersection Signal Delay: 11.1

Intersection LOS: B

Intersection Capacity Utilization 72.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                            |                                                                                        |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø3 |  Ø4 |
| 9 s                                                                                        | 30 s                                                                                       | 22 s                                                                                   | 14 s                                                                                     |
|  Ø6 (R) |                                                                                            |                                                                                        |                                                                                          |
| 39 s                                                                                       |                                                                                            |                                                                                        |                                                                                          |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø3 |
| Queue Length 50th (ft)  |    |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |

# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) Background Conditions Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |  |  |  |                                                                                     |
| Traffic Volume (vph)    | 3                                                                                 | 724                                                                               | 107                                                                               | 47                                                                                | 684                                                                               | 1                                                                                 | 93                                                                                 | 2                                                                                   | 51                                                                                  | 3                                                                                   | 10                                                                                  | 8                                                                                   |
| Future Volume (vph)     | 3                                                                                 | 724                                                                               | 107                                                                               | 47                                                                                | 684                                                                               | 1                                                                                 | 93                                                                                 | 2                                                                                   | 51                                                                                  | 3                                                                                   | 10                                                                                  | 8                                                                                   |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                 | 10                                                                                  | 10                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 250                                                                                 | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes           | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.981                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     | 0.935                                                                               |                                                                                     |
| Flt Protected           |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                    | 0.953                                                                               |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3324                                                                              | 0                                                                                 | 0                                                                                 | 3378                                                                              | 0                                                                                 | 0                                                                                  | 1641                                                                                | 1463                                                                                | 1752                                                                                | 1725                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.955                                                                             |                                                                                   |                                                                                   | 0.832                                                                             |                                                                                   |                                                                                    | 0.713                                                                               |                                                                                     | 0.684                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 3174                                                                              | 0                                                                                 | 0                                                                                 | 2819                                                                              | 0                                                                                 | 0                                                                                  | 1228                                                                                | 1463                                                                                | 1262                                                                                | 1725                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 44                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 111                                                                                 |                                                                                     | 10                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 502                                                                               |                                                                                   |                                                                                   | 407                                                                               |                                                                                   |                                                                                    | 423                                                                                 |                                                                                     |                                                                                     | 198                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                    | 11.5                                                                                |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.84                                                                               | 0.84                                                                                | 0.84                                                                                | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                |
| Heavy Vehicles (%)      | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                 | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  |
| Adj. Flow (vph)         | 3                                                                                 | 832                                                                               | 123                                                                               | 49                                                                                | 720                                                                               | 1                                                                                 | 111                                                                                | 2                                                                                   | 61                                                                                  | 4                                                                                   | 13                                                                                  | 10                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 958                                                                               | 0                                                                                 | 0                                                                                 | 770                                                                               | 0                                                                                 | 0                                                                                  | 113                                                                                 | 61                                                                                  | 4                                                                                   | 23                                                                                  | 0                                                                                   |
| Turn Type               | pm+pt                                                                             | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  | Perm                                                                                | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        | 1                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                  |                                                                                     | 4                                                                                   | 4                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                  | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 3.0                                                                               | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0                                                                                | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 7.3                                                                               | 21.3                                                                              |                                                                                   | 21.3                                                                              | 21.3                                                                              |                                                                                   | 11.9                                                                               | 11.9                                                                                | 11.9                                                                                | 11.9                                                                                | 11.9                                                                                |                                                                                     |
| Total Split (s)         | 7.3                                                                               | 55.0                                                                              |                                                                                   | 47.7                                                                              | 47.7                                                                              |                                                                                   | 20.0                                                                               | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                |                                                                                     |
| Total Split (%)         | 9.7%                                                                              | 73.3%                                                                             |                                                                                   | 63.6%                                                                             | 63.6%                                                                             |                                                                                   | 26.7%                                                                              | 26.7%                                                                               | 26.7%                                                                               | 26.7%                                                                               | 26.7%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.3                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.0                                                                               | 1.3                                                                               |                                                                                   | 1.3                                                                               | 1.3                                                                               |                                                                                   | 1.9                                                                                | 1.9                                                                                 | 1.9                                                                                 | 1.9                                                                                 | 1.9                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 6.3                                                                               |                                                                                   |                                                                                   | 6.3                                                                               |                                                                                   |                                                                                    | 4.9                                                                                 | 4.9                                                                                 | 4.9                                                                                 | 4.9                                                                                 |                                                                                     |
| Lead/Lag                | Lead                                                                              |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | Max                                                                               | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 55.5                                                                              |                                                                                   |                                                                                   | 41.4                                                                              |                                                                                   |                                                                                    | 10.7                                                                                | 10.7                                                                                | 10.7                                                                                | 10.7                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.74                                                                              |                                                                                   |                                                                                   | 0.55                                                                              |                                                                                   |                                                                                    | 0.14                                                                                | 0.14                                                                                | 0.14                                                                                | 0.14                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.40                                                                              |                                                                                   |                                                                                   | 0.49                                                                              |                                                                                   |                                                                                    | 0.65                                                                                | 0.20                                                                                | 0.02                                                                                | 0.09                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 3.1                                                                               |                                                                                   |                                                                                   | 6.8                                                                               |                                                                                   |                                                                                    | 46.8                                                                                | 3.0                                                                                 | 25.3                                                                                | 19.5                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 3.1                                                                               |                                                                                   |                                                                                   | 6.8                                                                               |                                                                                   |                                                                                    | 46.8                                                                                | 3.0                                                                                 | 25.3                                                                                | 19.5                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | D                                                                                   | A                                                                                   | C                                                                                   | B                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 3.1                                                                               |                                                                                   |                                                                                   | 6.8                                                                               |                                                                                   |                                                                                    | 31.5                                                                                |                                                                                     |                                                                                     | 20.4                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |



# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) Background Conditions Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  |                                                                                   | 47                                                                                |                                                                                   |                                                                                   | 43                                                                                |                                                                                   |                                                                                    | 51                                                                                  | 0                                                                                   | 2                                                                                   | 5                                                                                   |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 62                                                                                |                                                                                   |                                                                                   | 53                                                                                |                                                                                   |                                                                                    | 88                                                                                  | 6                                                                                   | 8                                                                                   | 20                                                                                  |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 422                                                                               |                                                                                   |                                                                                   | 327                                                                               |                                                                                   |                                                                                    | 343                                                                                 |                                                                                     |                                                                                     | 118                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 250                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 2375                                                                              |                                                                                   |                                                                                   | 1556                                                                              |                                                                                   |                                                                                    | 247                                                                                 | 383                                                                                 | 254                                                                                 | 355                                                                                 |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.40                                                                              |                                                                                   |                                                                                   | 0.49                                                                              |                                                                                   |                                                                                    | 0.46                                                                                | 0.16                                                                                | 0.02                                                                                | 0.06                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 21 (28%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 7.4

Intersection LOS: A

Intersection Capacity Utilization 70.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                            |                                                                                      |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  |  Ø4 |
| 7.3 s                                                                                      | 47.7 s                                                                                     |                                                                                      | 20 s                                                                                     |
|  Ø6 (R) |                                                                                            |  |                                                                                          |
| 55 s                                                                                       |                                                                                            |                                                                                      |                                                                                          |

## 108: Burroughs Road &amp; Route 58 (Black Rock Turnpike)

## 2040 Background Conditions

## Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 62                                                                                | 753                                                                               | 12                                                                                | 5                                                                                 | 669                                                                               | 113                                                                               | 14                                                                                | 59                                                                                  | 7                                                                                   | 118                                                                                 | 51                                                                                  | 47                                                                                  |
| Future Volume (vph)     | 62                                                                                | 753                                                                               | 12                                                                                | 5                                                                                 | 669                                                                               | 113                                                                               | 14                                                                                | 59                                                                                  | 7                                                                                   | 118                                                                                 | 51                                                                                  | 47                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 16                                                                                  | 12                                                                                  | 12                                                                                  | 16                                                                                  | 12                                                                                  |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   | 0.978                                                                             |                                                                                   |                                                                                   | 0.988                                                                               |                                                                                     |                                                                                     | 0.970                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.991                                                                               |                                                                                     |                                                                                     | 0.973                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3335                                                                              | 0                                                                                 | 0                                                                                 | 3282                                                                              | 0                                                                                 | 0                                                                                 | 2027                                                                                | 0                                                                                   | 0                                                                                   | 1954                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.821                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.924                                                                               |                                                                                     |                                                                                     | 0.811                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 2749                                                                              | 0                                                                                 | 0                                                                                 | 3118                                                                              | 0                                                                                 | 0                                                                                 | 1890                                                                                | 0                                                                                   | 0                                                                                   | 1629                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 3                                                                                 |                                                                                   |                                                                                   | 37                                                                                |                                                                                   |                                                                                   | 7                                                                                   |                                                                                     |                                                                                     | 20                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 407                                                                               |                                                                                   |                                                                                   | 996                                                                               |                                                                                   |                                                                                   | 466                                                                                 |                                                                                     |                                                                                     | 300                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                   | 22.6                                                                              |                                                                                   |                                                                                   | 12.7                                                                                |                                                                                     |                                                                                     | 8.2                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.80                                                                              | 0.80                                                                                | 0.80                                                                                | 0.83                                                                                | 0.83                                                                                | 0.83                                                                                |
| Heavy Vehicles (%)      | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  |
| Adj. Flow (vph)         | 72                                                                                | 876                                                                               | 14                                                                                | 5                                                                                 | 697                                                                               | 118                                                                               | 18                                                                                | 74                                                                                  | 9                                                                                   | 142                                                                                 | 61                                                                                  | 57                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 962                                                                               | 0                                                                                 | 0                                                                                 | 820                                                                               | 0                                                                                 | 0                                                                                 | 101                                                                                 | 0                                                                                   | 0                                                                                   | 260                                                                                 | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 6                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 4                                                                                   |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 15.0                                                                              | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 9.0                                                                               | 9.0                                                                                 |                                                                                     | 9.0                                                                                 | 9.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 20.6                                                                              | 20.6                                                                              |                                                                                   | 20.6                                                                              | 20.6                                                                              |                                                                                   | 14.4                                                                              | 14.4                                                                                |                                                                                     | 14.4                                                                                | 14.4                                                                                |                                                                                     |
| Total Split (s)         | 44.0                                                                              | 44.0                                                                              |                                                                                   | 44.0                                                                              | 44.0                                                                              |                                                                                   | 31.0                                                                              | 31.0                                                                                |                                                                                     | 31.0                                                                                | 31.0                                                                                |                                                                                     |
| Total Split (%)         | 58.7%                                                                             | 58.7%                                                                             |                                                                                   | 58.7%                                                                             | 58.7%                                                                             |                                                                                   | 41.3%                                                                             | 41.3%                                                                               |                                                                                     | 41.3%                                                                               | 41.3%                                                                               |                                                                                     |
| Yellow Time (s)         | 4.1                                                                               | 4.1                                                                               |                                                                                   | 4.1                                                                               | 4.1                                                                               |                                                                                   | 3.1                                                                               | 3.1                                                                                 |                                                                                     | 3.1                                                                                 | 3.1                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.5                                                                               | 1.5                                                                               |                                                                                   | 1.5                                                                               | 1.5                                                                               |                                                                                   | 2.3                                                                               | 2.3                                                                                 |                                                                                     | 2.3                                                                                 | 2.3                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   | 5.4                                                                                 |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | C-Max                                                                             | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                              | None                                                                                |                                                                                     | None                                                                                | None                                                                                |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 47.9                                                                              |                                                                                   |                                                                                   | 47.9                                                                              |                                                                                   |                                                                                   | 16.1                                                                                |                                                                                     |                                                                                     | 16.1                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.64                                                                              |                                                                                   |                                                                                   | 0.64                                                                              |                                                                                   |                                                                                   | 0.21                                                                                |                                                                                     |                                                                                     | 0.21                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.55                                                                              |                                                                                   |                                                                                   | 0.41                                                                              |                                                                                   |                                                                                   | 0.25                                                                                |                                                                                     |                                                                                     | 0.71                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 5.4                                                                               |                                                                                   |                                                                                   | 7.9                                                                               |                                                                                   |                                                                                   | 22.3                                                                                |                                                                                     |                                                                                     | 35.5                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 5.4                                                                               |                                                                                   |                                                                                   | 7.9                                                                               |                                                                                   |                                                                                   | 22.3                                                                                |                                                                                     |                                                                                     | 35.5                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 5.4                                                                               |                                                                                   |                                                                                   | 7.9                                                                               |                                                                                   |                                                                                   | 22.3                                                                                |                                                                                     |                                                                                     | 35.5                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 43                                                                                |                                                                                   |                                                                                   | 81                                                                                |                                                                                   |                                                                                   | 36                                                                                  |                                                                                     |                                                                                     | 104                                                                                 |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 57                                                                                |                                                                                   |                                                                                   | 150                                                                               |                                                                                   |                                                                                   | 58                                                                                  |                                                                                     |                                                                                     | 144                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 327                                                                               |                                                                                   |                                                                                   | 916                                                                               |                                                                                   |                                                                                   | 386                                                                                 |                                                                                     |                                                                                     | 220                                                                                 |                                                                                     |

# 108: Burroughs Road & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

2040 Background Conditions  
Timing Plan: Weekday Midday P

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Turn Bay Length (ft)   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)    |                                                                                   | 1757                                                                              |                                                                                   |                                                                                   | 2005                                                                              |                                                                                   |                                                                                    | 649                                                                                 |                                                                                     |                                                                                     | 569                                                                                 |                                                                                     |
| Starvation Cap Reductn |                                                                                   | 42                                                                                |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   | 0.56                                                                              |                                                                                   |                                                                                   | 0.41                                                                              |                                                                                   |                                                                                    | 0.16                                                                                |                                                                                     |                                                                                     | 0.46                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 20 (27%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 10.8

Intersection LOS: B

Intersection Capacity Utilization 77.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)

|                                                                                           |                                                                                    |                                                                                     |
|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  Ø2 (R)  |   |    |
| 44 s                                                                                      | 31 s                                                                               |                                                                                     |
|  Ø6 (R) |  |  |
| 44 s                                                                                      | 31 s                                                                               |                                                                                     |

109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) 2049 Black Rock Turnpike  
 Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         | →     | ↖     | ↗    | ↘     | ↙     | ↕     | ↖     | ↗     | ↘    | ↙    | ↕     | ↖     |
|-------------------------|-------|-------|------|-------|-------|-------|-------|-------|------|------|-------|-------|
| Lane Group              | EBT   | EBR   | EBR2 | WBL2  | WBL   | WBT   | NWL2  | NWL   | NWR  | NWR2 | NEL   | NET   |
| Lane Configurations     | ↖     | ↗     |      |       |       | ↕     |       | ↗     |      |      |       | ↕     |
| Traffic Volume (vph)    | 356   | 468   | 6    | 34    | 7     | 347   | 4     | 396   | 2    | 24   | 5     | 0     |
| Future Volume (vph)     | 356   | 468   | 6    | 34    | 7     | 347   | 4     | 396   | 2    | 24   | 5     | 0     |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  | 1900  | 1900  | 1900 | 1900 | 1900  | 1900  |
| Lane Width (ft)         | 12    | 12    | 12   | 12    | 11    | 11    | 12    | 10    | 12   | 12   | 12    | 12    |
| Lane Util. Factor       | 1.00  | 1.00  | 1.00 | 0.95  | 0.95  | 0.95  | 0.95  | 0.97  | 0.95 | 0.95 | 1.00  | 1.00  |
| Frt                     |       | 0.850 |      |       |       |       |       | 0.991 |      |      |       | 0.939 |
| Flt Protected           |       |       |      |       |       | 0.995 |       | 0.955 |      |      |       | 0.973 |
| Satd. Flow (prot)       | 1827  | 1553  | 0    | 0     | 0     | 3339  | 0     | 3131  | 0    | 0    | 0     | 1669  |
| Flt Permitted           |       |       |      |       |       | 0.845 |       | 0.947 |      |      |       |       |
| Satd. Flow (perm)       | 1827  | 1553  | 0    | 0     | 0     | 2835  | 0     | 3104  | 0    | 0    | 0     | 1715  |
| Right Turn on Red       |       |       | Yes  |       |       |       |       |       |      | Yes  |       |       |
| Satd. Flow (RTOR)       |       | 57    |      |       |       |       |       | 152   |      |      |       |       |
| Link Speed (mph)        | 30    |       |      |       |       | 30    |       | 30    |      |      |       | 25    |
| Link Distance (ft)      | 996   |       |      |       |       | 549   |       | 218   |      |      |       | 653   |
| Travel Time (s)         | 22.6  |       |      |       |       | 12.5  |       | 5.0   |      |      |       | 17.8  |
| Peak Hour Factor        | 0.90  | 0.90  | 0.90 | 0.90  | 0.90  | 0.90  | 0.95  | 0.95  | 0.95 | 0.95 | 0.80  | 0.80  |
| Heavy Vehicles (%)      | 4%    | 4%    | 4%   | 4%    | 4%    | 4%    | 4%    | 4%    | 4%   | 4%   | 4%    | 4%    |
| Adj. Flow (vph)         | 396   | 520   | 7    | 38    | 8     | 386   | 4     | 417   | 2    | 25   | 6     | 0     |
| Shared Lane Traffic (%) |       |       |      |       |       |       |       |       |      |      |       |       |
| Lane Group Flow (vph)   | 396   | 527   | 0    | 0     | 0     | 432   | 0     | 448   | 0    | 0    | 0     | 11    |
| Turn Type               | NA    | pm+ov |      | Perm  | Perm  | NA    | D.Pm  | Prot  |      |      | Perm  | NA    |
| Protected Phases        | 2     | 4     |      |       |       | 2     |       | 4     |      |      |       | 5     |
| Permitted Phases        |       | 2     |      | 2     | 2     |       | 4     |       |      |      | 5     |       |
| Detector Phase          | 2     | 4     |      | 2     | 2     | 2     | 4     | 4     |      |      | 5     | 5     |
| Switch Phase            |       |       |      |       |       |       |       |       |      |      |       |       |
| Minimum Initial (s)     | 15.0  | 9.0   |      | 15.0  | 15.0  | 15.0  | 9.0   | 9.0   |      |      | 5.0   | 5.0   |
| Minimum Split (s)       | 22.8  | 15.4  |      | 22.8  | 22.8  | 22.8  | 15.4  | 15.4  |      |      | 12.6  | 12.6  |
| Total Split (s)         | 35.8  | 33.4  |      | 35.8  | 35.8  | 35.8  | 33.4  | 33.4  |      |      | 19.6  | 19.6  |
| Total Split (%)         | 40.3% | 37.6% |      | 40.3% | 40.3% | 40.3% | 37.6% | 37.6% |      |      | 22.1% | 22.1% |
| Yellow Time (s)         | 4.1   | 3.3   |      | 4.1   | 4.1   | 4.1   | 3.3   | 3.3   |      |      | 3.3   | 3.3   |
| All-Red Time (s)        | 3.7   | 3.1   |      | 3.7   | 3.7   | 3.7   | 3.1   | 3.1   |      |      | 4.3   | 4.3   |
| Lost Time Adjust (s)    | 0.0   | 0.0   |      |       |       | 0.0   |       | 0.0   |      |      |       | 0.0   |
| Total Lost Time (s)     | 7.8   | 6.4   |      |       |       | 7.8   |       | 6.4   |      |      |       | 7.6   |
| Lead/Lag                |       |       |      |       |       |       |       |       |      |      |       |       |
| Lead-Lag Optimize?      |       |       |      |       |       |       |       |       |      |      |       |       |
| Recall Mode             | Min   | None  |      | Min   | Min   | Min   | None  | None  |      |      | None  | None  |
| Act Effect Green (s)    | 17.6  | 41.5  |      |       |       | 17.6  |       | 10.8  |      |      |       | 5.5   |
| Actuated g/C Ratio      | 0.37  | 0.87  |      |       |       | 0.37  |       | 0.23  |      |      |       | 0.12  |
| v/c Ratio               | 0.59  | 0.39  |      |       |       | 0.41  |       | 0.54  |      |      |       | 0.06  |
| Control Delay           | 18.1  | 3.5   |      |       |       | 14.2  |       | 14.7  |      |      |       | 25.4  |
| Queue Delay             | 0.0   | 0.0   |      |       |       | 0.0   |       | 0.0   |      |      |       | 0.0   |
| Total Delay             | 18.1  | 3.5   |      |       |       | 14.2  |       | 14.7  |      |      |       | 25.4  |
| LOS                     | B     | A     |      |       |       | B     |       | B     |      |      |       | C     |
| Approach Delay          | 9.8   |       |      |       |       | 14.2  |       | 14.7  |      |      |       | 25.4  |
| Approach LOS            | A     |       |      |       |       | B     |       | B     |      |      |       | C     |
| Queue Length 50th (ft)  | 61    | 0     |      |       |       | 32    |       | 27    |      |      |       | 2     |
| Queue Length 95th (ft)  | 216   | 118   |      |       |       | 107   |       | 95    |      |      |       | 16    |
| Internal Link Dist (ft) | 916   |       |      |       |       | 469   |       | 138   |      |      |       | 573   |

109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) 2049 Black Rock Turnpike  
 Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

| Lane Group              | NER2 | SWL   | SWT   | SWR  |
|-------------------------|------|-------|-------|------|
| Lane Configurations     |      |       |       |      |
| Traffic Volume (vph)    | 4    | 5     | 0     | 6    |
| Future Volume (vph)     | 4    | 5     | 0     | 6    |
| Ideal Flow (vphpl)      | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12   | 15    | 12    | 12   |
| Lane Util. Factor       | 1.00 | 1.00  | 1.00  | 1.00 |
| Frt                     |      |       | 0.923 |      |
| Flt Protected           |      |       | 0.979 |      |
| Satd. Flow (prot)       | 0    | 0     | 1651  | 0    |
| Flt Permitted           |      |       |       |      |
| Satd. Flow (perm)       | 0    | 0     | 1686  | 0    |
| Right Turn on Red       | No   |       |       | No   |
| Satd. Flow (RTOR)       |      |       |       |      |
| Link Speed (mph)        |      |       | 25    |      |
| Link Distance (ft)      |      |       | 695   |      |
| Travel Time (s)         |      |       | 19.0  |      |
| Peak Hour Factor        | 0.80 | 0.80  | 0.80  | 0.80 |
| Heavy Vehicles (%)      | 4%   | 4%    | 4%    | 4%   |
| Adj. Flow (vph)         | 5    | 6     | 0     | 8    |
| Shared Lane Traffic (%) |      |       |       |      |
| Lane Group Flow (vph)   | 0    | 0     | 14    | 0    |
| Turn Type               |      | Perm  | NA    |      |
| Protected Phases        |      |       | 5     |      |
| Permitted Phases        |      | 5     |       |      |
| Detector Phase          |      | 5     | 5     |      |
| Switch Phase            |      |       |       |      |
| Minimum Initial (s)     |      | 5.0   | 5.0   |      |
| Minimum Split (s)       |      | 12.6  | 12.6  |      |
| Total Split (s)         |      | 19.6  | 19.6  |      |
| Total Split (%)         |      | 22.1% | 22.1% |      |
| Yellow Time (s)         |      | 3.3   | 3.3   |      |
| All-Red Time (s)        |      | 4.3   | 4.3   |      |
| Lost Time Adjust (s)    |      |       | 0.0   |      |
| Total Lost Time (s)     |      |       | 7.6   |      |
| Lead/Lag                |      |       |       |      |
| Lead-Lag Optimize?      |      |       |       |      |
| Recall Mode             |      | None  | None  |      |
| Act Effct Green (s)     |      |       | 5.5   |      |
| Actuated g/C Ratio      |      |       | 0.12  |      |
| v/c Ratio               |      |       | 0.07  |      |
| Control Delay           |      |       | 25.6  |      |
| Queue Delay             |      |       | 0.0   |      |
| Total Delay             |      |       | 25.6  |      |
| LOS                     |      |       | C     |      |
| Approach Delay          |      |       | 25.6  |      |
| Approach LOS            |      |       | C     |      |
| Queue Length 50th (ft)  |      |       | 3     |      |
| Queue Length 95th (ft)  |      |       | 19    |      |
| Internal Link Dist (ft) |      |       | 615   |      |



109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)

Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                        |  |  |  |  |  |  |  |  |  |  |  |  |
| Lane Group             | EBT                                                                               | EBR                                                                               | EBR2                                                                              | WBL2                                                                              | WBL                                                                               | WBT                                                                               | NWL2                                                                               | NWL                                                                                 | NWR                                                                                 | NWR2                                                                                | NEL                                                                                 | NET                                                                                 |
| Turn Bay Length (ft)   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)    | 1138                                                                              | 1497                                                                              |                                                                                   |                                                                                   |                                                                                   | 1766                                                                              |                                                                                    | 1925                                                                                |                                                                                     |                                                                                     |                                                                                     | 457                                                                                 |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     | 0                                                                                   |
| Reduced v/c Ratio      | 0.35                                                                              | 0.35                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.24                                                                              |                                                                                    | 0.23                                                                                |                                                                                     |                                                                                     |                                                                                     | 0.02                                                                                |

Intersection Summary

|                                   |                        |
|-----------------------------------|------------------------|
| Area Type:                        | Other                  |
| Cycle Length:                     | 88.8                   |
| Actuated Cycle Length:            | 47.6                   |
| Natural Cycle:                    | 60                     |
| Control Type:                     | Actuated-Uncoordinated |
| Maximum v/c Ratio:                | 0.59                   |
| Intersection Signal Delay:        | 12.2                   |
| Intersection Capacity Utilization | 72.3%                  |
| Intersection LOS:                 | B                      |
| ICU Level of Service              | C                      |
| Analysis Period (min)             | 15                     |

Splits and Phases: 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)/Route 58 (Tunxis Hill Cut

|                                                                                      |                                                                                      |                                                                                        |
|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
|  Ø2 |  Ø4 |  Ø5 |
| 35.8 s                                                                               | 33.4 s                                                                               | 19.6 s                                                                                 |

|                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                        |  |  |  |  |
| Lane Group             | NER2                                                                              | SWL                                                                               | SWT                                                                               | SWR                                                                               |
| Turn Bay Length (ft)   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Base Capacity (vph)    | 450                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Starvation Cap Reductn | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Storage Cap Reductn    | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Reduced v/c Ratio      | 0.03                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

201: Tunxis Hill Road & Route 58 (Tunxis Hill Cutoff)  
Lanes, Volumes, Timings

2040 Background Conditions  
Timing Plan: Weekday Midday P

|                         | →     | ↘    | ↙    | ←     | ↖     | ↗     |
|-------------------------|-------|------|------|-------|-------|-------|
| Lane Group              | EBT   | EBR  | WBL  | WBT   | NBL   | NBR   |
| Lane Configurations     | ↑↑    |      |      | ↑     | ↑     | ↑     |
| Traffic Volume (vph)    | 440   | 11   | 36   | 411   | 3     | 61    |
| Future Volume (vph)     | 440   | 11   | 36   | 411   | 3     | 61    |
| Ideal Flow (vphpl)      | 1900  | 1900 | 1900 | 1900  | 1900  | 1900  |
| Lane Width (ft)         | 11    | 12   | 12   | 11    | 10    | 10    |
| Storage Length (ft)     |       | 0    | 0    |       | 0     | 50    |
| Storage Lanes           |       | 0    | 0    |       | 1     | 1     |
| Taper Length (ft)       |       |      | 25   |       | 25    |       |
| Lane Util. Factor       | 0.95  | 0.95 | 1.00 | 1.00  | 1.00  | 1.00  |
| Frt                     | 0.996 |      |      |       |       | 0.850 |
| Flt Protected           |       |      |      | 0.996 | 0.950 |       |
| Satd. Flow (prot)       | 3374  | 0    | 0    | 1776  | 1636  | 1463  |
| Flt Permitted           |       |      |      | 0.996 | 0.950 |       |
| Satd. Flow (perm)       | 3374  | 0    | 0    | 1776  | 1636  | 1463  |
| Link Speed (mph)        | 30    |      |      | 30    | 25    |       |
| Link Distance (ft)      | 1095  |      |      | 214   | 782   |       |
| Travel Time (s)         | 24.9  |      |      | 4.9   | 21.3  |       |
| Peak Hour Factor        | 0.85  | 0.85 | 0.86 | 0.86  | 0.88  | 0.88  |
| Heavy Vehicles (%)      | 3%    | 3%   | 3%   | 3%    | 3%    | 3%    |
| Adj. Flow (vph)         | 518   | 13   | 42   | 478   | 3     | 69    |
| Shared Lane Traffic (%) |       |      |      |       |       |       |
| Lane Group Flow (vph)   | 531   | 0    | 0    | 520   | 3     | 69    |
| Sign Control            | Free  |      |      | Free  | Stop  |       |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 49.5% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↑↑   |      |      | ↑    | ↑    | ↑    |
| Traffic Vol, veh/h       | 440  | 11   | 36   | 411  | 3    | 61   |
| Future Vol, veh/h        | 440  | 11   | 36   | 411  | 3    | 61   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | 0    | 50   |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 85   | 85   | 86   | 86   | 88   | 88   |
| Heavy Vehicles, %        | 3    | 3    | 3    | 3    | 3    | 3    |
| Mvmt Flow                | 518  | 13   | 42   | 478  | 3    | 69   |

| Major/Minor          | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0      | 0      | 531    |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Critical Hdwy        | -      | -      | 4.145  |
| Critical Hdwy Stg 1  | -      | -      | -      |
| Critical Hdwy Stg 2  | -      | -      | -      |
| Follow-up Hdwy       | -      | -      | 2.2285 |
| Pot Cap-1 Maneuver   | -      | -      | 1028   |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | -      | -      | 1028   |
| Mov Cap-2 Maneuver   | -      | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |

| Approach             | EB | WB  | NB |
|----------------------|----|-----|----|
| HCM Control Delay, s | 0  | 0.7 | 11 |
| HCM LOS              |    |     | B  |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | 211   | 731   | -   | -   | 1028  | -   |
| HCM Lane V/C Ratio    | 0.016 | 0.095 | -   | -   | 0.041 | -   |
| HCM Control Delay (s) | 22.3  | 10.4  | -   | -   | 8.7   | 0   |
| HCM Lane LOS          | C     | B     | -   | -   | A     | A   |
| HCM 95th %tile Q(veh) | 0     | 0.3   | -   | -   | 0.1   | -   |

202: Route 732 (Black Rock Turnpike) & Judd Street  
Lanes, Volumes, Timings

2040 Background Conditions  
Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (vph)    | 21                                                                                | 65                                                                                | 49                                                                                | 406                                                                               | 484                                                                               | 28                                                                                |
| Future Volume (vph)     | 21                                                                                | 65                                                                                | 49                                                                                | 406                                                                               | 484                                                                               | 28                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Storage Length (ft)     | 0                                                                                 | 0                                                                                 | 25                                                                                |                                                                                   |                                                                                   | 0                                                                                 |
| Storage Lanes           | 1                                                                                 | 0                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 25                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.898                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.993                                                                             |                                                                                   |
| Flt Protected           | 0.988                                                                             |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1820                                                                              | 0                                                                                 | 0                                                                                 | 3421                                                                              | 1797                                                                              | 0                                                                                 |
| Flt Permitted           | 0.988                                                                             |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1820                                                                              | 0                                                                                 | 0                                                                                 | 3421                                                                              | 1797                                                                              | 0                                                                                 |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 586                                                                               |                                                                                   |                                                                                   | 395                                                                               | 218                                                                               |                                                                                   |
| Travel Time (s)         | 16.0                                                                              |                                                                                   |                                                                                   | 9.0                                                                               | 5.0                                                                               |                                                                                   |
| Peak Hour Factor        | 0.90                                                                              | 0.90                                                                              | 0.94                                                                              | 0.94                                                                              | 0.87                                                                              | 0.87                                                                              |
| Heavy Vehicles (%)      | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                |
| Adj. Flow (vph)         | 23                                                                                | 72                                                                                | 52                                                                                | 432                                                                               | 556                                                                               | 32                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 95                                                                                | 0                                                                                 | 0                                                                                 | 484                                                                               | 588                                                                               | 0                                                                                 |
| Sign Control            | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 55.0% ICU Level of Service A

Analysis Period (min) 15



Intersection

Int Delay, s/veh 1.8

| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↔    |      |      | ↕    | ↕    |      |
| Traffic Vol, veh/h       | 21   | 65   | 49   | 406  | 484  | 28   |
| Future Vol, veh/h        | 21   | 65   | 49   | 406  | 484  | 28   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 0    | -    | 25   | -    | -    | -    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 90   | 90   | 94   | 94   | 87   | 87   |
| Heavy Vehicles, %        | 5    | 5    | 5    | 5    | 5    | 5    |
| Mvmt Flow                | 23   | 72   | 52   | 432  | 556  | 32   |

| Major/Minor          | Minor2 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 892    | 572    | 589    |
| Stage 1              | 572    | -      | -      |
| Stage 2              | 320    | -      | -      |
| Critical Hdwy        | 6.675  | 6.275  | 4.175  |
| Critical Hdwy Stg 1  | 5.475  | -      | -      |
| Critical Hdwy Stg 2  | 5.875  | -      | -      |
| Follow-up Hdwy       | 3.5475 | 3.3475 | 2.2475 |
| Pot Cap-1 Maneuver   | 292    | 512    | 967    |
| Stage 1              | 556    | -      | -      |
| Stage 2              | 702    | -      | -      |
| Platoon blocked, %   |        |        |        |
| Mov Cap-1 Maneuver   | 271    | 512    | 967    |
| Mov Cap-2 Maneuver   | 271    | -      | -      |
| Stage 1              | 556    | -      | -      |
| Stage 2              | 652    | -      | -      |

| Approach             | EB | NB  | SB |
|----------------------|----|-----|----|
| HCM Control Delay, s | 16 | 1.2 | 0  |
| HCM LOS              | C  |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 967   | -   | 421   | -   | -   |
| HCM Lane V/C Ratio    | 0.054 | -   | 0.227 | -   | -   |
| HCM Control Delay (s) | 8.9   | 0.3 | 16    | -   | -   |
| HCM Lane LOS          | A     | A   | C     | -   | -   |
| HCM 95th %tile Q(veh) | 0.2   | -   | 0.9   | -   | -   |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/2040 Background Conditions

## Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 10                                                                                | 0                                                                                 | 1                                                                                 | 54                                                                                | 4                                                                                 | 57                                                                                | 4                                                                                  | 802                                                                                 | 112                                                                                 | 128                                                                                 | 975                                                                                 | 5                                                                                   |
| Future Volume (vph)     | 10                                                                                | 0                                                                                 | 1                                                                                 | 54                                                                                | 4                                                                                 | 57                                                                                | 4                                                                                  | 802                                                                                 | 112                                                                                 | 128                                                                                 | 975                                                                                 | 5                                                                                   |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                 | 13                                                                                  | 12                                                                                  | 12                                                                                  | 13                                                                                  | 12                                                                                  |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.990                                                                             |                                                                                   |                                                                                   | 0.932                                                                             |                                                                                   |                                                                                    | 0.983                                                                               |                                                                                     |                                                                                     | 0.999                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.956                                                                             |                                                                                   |                                                                                   | 0.977                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.994                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 1998                                                                              | 0                                                                                 | 0                                                                                 | 1922                                                                              | 0                                                                                 | 0                                                                                  | 1892                                                                                | 0                                                                                   | 0                                                                                   | 1911                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.695                                                                             |                                                                                   |                                                                                   | 0.844                                                                             |                                                                                   |                                                                                    | 0.996                                                                               |                                                                                     |                                                                                     | 0.788                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 1453                                                                              | 0                                                                                 | 0                                                                                 | 1661                                                                              | 0                                                                                 | 0                                                                                  | 1885                                                                                | 0                                                                                   | 0                                                                                   | 1515                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 43                                                                                |                                                                                   |                                                                                   | 63                                                                                |                                                                                   |                                                                                    | 22                                                                                  |                                                                                     |                                                                                     | 1                                                                                   |                                                                                     |
| Link Speed (mph)        |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 35                                                                                  |                                                                                     |                                                                                     | 35                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 378                                                                               |                                                                                   |                                                                                   | 442                                                                               |                                                                                   |                                                                                    | 1898                                                                                |                                                                                     |                                                                                     | 522                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 10.3                                                                              |                                                                                   |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                    | 37.0                                                                                |                                                                                     |                                                                                     | 10.2                                                                                |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                |
| Adj. Flow (vph)         | 13                                                                                | 0                                                                                 | 1                                                                                 | 59                                                                                | 4                                                                                 | 63                                                                                | 4                                                                                  | 872                                                                                 | 122                                                                                 | 147                                                                                 | 1121                                                                                | 6                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 14                                                                                | 0                                                                                 | 0                                                                                 | 126                                                                               | 0                                                                                 | 0                                                                                  | 998                                                                                 | 0                                                                                   | 0                                                                                   | 1274                                                                                | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                    | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Permitted Phases        | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   | 2                                                                                  |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 4                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |                                                                                   | 2                                                                                  | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 15.0                                                                               | 15.0                                                                                |                                                                                     | 15.0                                                                                | 15.0                                                                                |                                                                                     |
| Minimum Split (s)       | 11.7                                                                              | 11.7                                                                              |                                                                                   | 11.7                                                                              | 11.7                                                                              |                                                                                   | 20.6                                                                               | 20.6                                                                                |                                                                                     | 20.6                                                                                | 20.6                                                                                |                                                                                     |
| Total Split (s)         | 17.7                                                                              | 17.7                                                                              |                                                                                   | 17.7                                                                              | 17.7                                                                              |                                                                                   | 48.6                                                                               | 48.6                                                                                |                                                                                     | 48.6                                                                                | 48.6                                                                                |                                                                                     |
| Total Split (%)         | 26.7%                                                                             | 26.7%                                                                             |                                                                                   | 26.7%                                                                             | 26.7%                                                                             |                                                                                   | 73.3%                                                                              | 73.3%                                                                               |                                                                                     | 73.3%                                                                               | 73.3%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.3                                                                               | 3.3                                                                               |                                                                                   | 3.3                                                                               | 3.3                                                                               |                                                                                   | 4.0                                                                                | 4.0                                                                                 |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.4                                                                               | 1.4                                                                               |                                                                                   | 1.4                                                                               | 1.4                                                                               |                                                                                   | 1.6                                                                                | 1.6                                                                                 |                                                                                     | 1.6                                                                                 | 1.6                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                    | 5.6                                                                                 |                                                                                     |                                                                                     | 5.6                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              |                                                                                   | Min                                                                                | Min                                                                                 |                                                                                     | Min                                                                                 | Min                                                                                 |                                                                                     |
| Act Effct Green (s)     |                                                                                   | 8.2                                                                               |                                                                                   |                                                                                   | 8.2                                                                               |                                                                                   |                                                                                    | 49.0                                                                                |                                                                                     |                                                                                     | 49.0                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.13                                                                              |                                                                                   |                                                                                   | 0.13                                                                              |                                                                                   |                                                                                    | 0.77                                                                                |                                                                                     |                                                                                     | 0.77                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.06                                                                              |                                                                                   |                                                                                   | 0.47                                                                              |                                                                                   |                                                                                    | 0.69                                                                                |                                                                                     |                                                                                     | 1.10                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 2.2                                                                               |                                                                                   |                                                                                   | 20.1                                                                              |                                                                                   |                                                                                    | 9.1                                                                                 |                                                                                     |                                                                                     | 73.4                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 2.2                                                                               |                                                                                   |                                                                                   | 20.1                                                                              |                                                                                   |                                                                                    | 9.1                                                                                 |                                                                                     |                                                                                     | 73.4                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 2.2                                                                               |                                                                                   |                                                                                   | 20.1                                                                              |                                                                                   |                                                                                    | 9.1                                                                                 |                                                                                     |                                                                                     | 73.4                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 22                                                                                |                                                                                   |                                                                                    | 161                                                                                 |                                                                                     |                                                                                     | ~579                                                                                |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 64                                                                                |                                                                                   |                                                                                    | 387                                                                                 |                                                                                     |                                                                                     | #841                                                                                |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 298                                                                               |                                                                                   |                                                                                   | 362                                                                               |                                                                                   |                                                                                    | 1818                                                                                |                                                                                     |                                                                                     | 442                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive Background Conditions Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Base Capacity (vph)    |                                                                                   | 330                                                                               |                                                                                   |                                                                                   | 388                                                                               |                                                                                   |                                                                                    | 1448                                                                                |                                                                                     |                                                                                     | 1159                                                                                |                                                                                     |
| Starvation Cap Reductn |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   | 0.04                                                                              |                                                                                   |                                                                                   | 0.32                                                                              |                                                                                   |                                                                                    | 0.69                                                                                |                                                                                     |                                                                                     | 1.10                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 66.3

Actuated Cycle Length: 64

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.10

Intersection Signal Delay: 43.6

Intersection LOS: D

Intersection Capacity Utilization 127.4%

ICU Level of Service H

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

|                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø2  |  Ø4  |
| 48.6 s                                                                                 | 17.7 s                                                                                   |
|  Ø6 |  Ø8 |
| 48.6 s                                                                                 | 17.7 s                                                                                   |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

## Lanes, Volumes, Timings

2040 Background Conditions

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |      |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3   |
| Lane Configurations     |  |  |  |  |  |  |      |
| Traffic Volume (vph)    | 178                                                                               | 344                                                                               | 135                                                                               | 808                                                                               | 946                                                                               | 88                                                                                |      |
| Future Volume (vph)     | 178                                                                               | 344                                                                               | 135                                                                               | 808                                                                               | 946                                                                               | 88                                                                                |      |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |      |
| Lane Width (ft)         | 10                                                                                | 10                                                                                | 11                                                                                | 11                                                                                | 12                                                                                | 12                                                                                |      |
| Storage Length (ft)     | 0                                                                                 | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   | 0                                                                                 |      |
| Storage Lanes           | 1                                                                                 | 1                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |      |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              |      |
| Frt                     |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.987                                                                             |                                                                                   |      |
| Flt Protected           | 0.950                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |      |
| Satd. Flow (prot)       | 1652                                                                              | 1478                                                                              | 1711                                                                              | 1801                                                                              | 3493                                                                              | 0                                                                                 |      |
| Flt Permitted           | 0.950                                                                             |                                                                                   | 0.176                                                                             |                                                                                   |                                                                                   |                                                                                   |      |
| Satd. Flow (perm)       | 1652                                                                              | 1478                                                                              | 317                                                                               | 1801                                                                              | 3493                                                                              | 0                                                                                 |      |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |      |
| Satd. Flow (RTOR)       |                                                                                   | 365                                                                               |                                                                                   |                                                                                   | 12                                                                                |                                                                                   |      |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 35                                                                                |                                                                                   |      |
| Link Distance (ft)      | 445                                                                               |                                                                                   |                                                                                   | 510                                                                               | 341                                                                               |                                                                                   |      |
| Travel Time (s)         | 12.1                                                                              |                                                                                   |                                                                                   | 11.6                                                                              | 6.6                                                                               |                                                                                   |      |
| Peak Hour Factor        | 0.90                                                                              | 0.90                                                                              | 0.88                                                                              | 0.88                                                                              | 0.95                                                                              | 0.95                                                                              |      |
| Adj. Flow (vph)         | 198                                                                               | 382                                                                               | 153                                                                               | 918                                                                               | 996                                                                               | 93                                                                                |      |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Group Flow (vph)   | 198                                                                               | 382                                                                               | 153                                                                               | 918                                                                               | 1089                                                                              | 0                                                                                 |      |
| Turn Type               | Prot                                                                              | Perm                                                                              | pm+pt                                                                             | NA                                                                                | NA                                                                                |                                                                                   |      |
| Protected Phases        | 4                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 | 2                                                                                 |                                                                                   | 3    |
| Permitted Phases        |                                                                                   | 4                                                                                 | 6                                                                                 |                                                                                   |                                                                                   |                                                                                   |      |
| Detector Phase          | 4                                                                                 | 4                                                                                 | 1                                                                                 | 6                                                                                 | 2                                                                                 |                                                                                   |      |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               | 5.0                                                                               | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0  |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              | 9.2                                                                               | 21.9                                                                              | 21.9                                                                              |                                                                                   | 22.0 |
| Total Split (s)         | 21.9                                                                              | 21.9                                                                              | 9.2                                                                               | 31.1                                                                              | 21.9                                                                              |                                                                                   | 22.0 |
| Total Split (%)         | 29.2%                                                                             | 29.2%                                                                             | 12.3%                                                                             | 41.5%                                                                             | 29.2%                                                                             |                                                                                   | 29%  |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               | 3.2                                                                               | 4.9                                                                               | 4.9                                                                               |                                                                                   | 4.0  |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 2.0                                                                               | 2.0                                                                               |                                                                                   | 0.0  |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               | 4.2                                                                               | 6.9                                                                               | 6.9                                                                               |                                                                                   |      |
| Lead/Lag                | Lag                                                                               | Lag                                                                               | Lead                                                                              |                                                                                   | Lag                                                                               |                                                                                   | Lead |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               |                                                                                   | Yes  |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                             | C-Max                                                                             |                                                                                   | None |
| Act Effct Green (s)     | 13.7                                                                              | 13.7                                                                              | 53.1                                                                              | 50.4                                                                              | 38.8                                                                              |                                                                                   |      |
| Actuated g/C Ratio      | 0.18                                                                              | 0.18                                                                              | 0.71                                                                              | 0.67                                                                              | 0.52                                                                              |                                                                                   |      |
| v/c Ratio               | 0.66                                                                              | 0.67                                                                              | 0.42                                                                              | 0.76                                                                              | 0.60                                                                              |                                                                                   |      |
| Control Delay           | 38.3                                                                              | 10.1                                                                              | 10.6                                                                              | 20.7                                                                              | 15.5                                                                              |                                                                                   |      |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Total Delay             | 38.3                                                                              | 10.1                                                                              | 10.6                                                                              | 20.7                                                                              | 15.5                                                                              |                                                                                   |      |
| LOS                     | D                                                                                 | B                                                                                 | B                                                                                 | C                                                                                 | B                                                                                 |                                                                                   |      |
| Approach Delay          | 19.8                                                                              |                                                                                   |                                                                                   | 19.2                                                                              | 15.5                                                                              |                                                                                   |      |
| Approach LOS            | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 | B                                                                                 |                                                                                   |      |
| Queue Length 50th (ft)  | 87                                                                                | 7                                                                                 | 40                                                                                | 356                                                                               | 169                                                                               |                                                                                   |      |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive Lanes, Volumes, Timings

2040 Background Conditions  
Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |    |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3 |
| Queue Length 95th (ft)  | 138                                                                               | 75                                                                                | 72                                                                                | #575                                                                              | 293                                                                               |                                                                                   |    |
| Internal Link Dist (ft) | 365                                                                               |                                                                                   |                                                                                   | 430                                                                               | 261                                                                               |                                                                                   |    |
| Turn Bay Length (ft)    |                                                                                   | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   |                                                                                   |    |
| Base Capacity (vph)     | 401                                                                               | 635                                                                               | 361                                                                               | 1209                                                                              | 1813                                                                              |                                                                                   |    |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Reduced v/c Ratio       | 0.49                                                                              | 0.60                                                                              | 0.42                                                                              | 0.76                                                                              | 0.60                                                                              |                                                                                   |    |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 22 (29%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 17.9

Intersection LOS: B

Intersection Capacity Utilization 61.5%

ICU Level of Service B

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

|                                                                                            |                                                                                            |                                                                                        |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø3 |  Ø4 |
| 9.2 s                                                                                      | 21.9 s                                                                                     | 22 s                                                                                   | 21.9 s                                                                                   |
|  Ø6 (R) |                                                                                            |                                                                                        |                                                                                          |
| 31.1 s                                                                                     |                                                                                            |                                                                                        |                                                                                          |



# 103: Route 58 (Black Rock Turnpike) & Brookside Drive

## Lanes, Volumes, Timings

2040 Background Conditions

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (vph)    | 135                                                                               | 73                                                                                | 40                                                                                | 778                                                                               | 1171                                                                              | 166                                                                               |
| Future Volume (vph)     | 135                                                                               | 73                                                                                | 40                                                                                | 778                                                                               | 1171                                                                              | 166                                                                               |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              |
| Frt                     | 0.953                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.981                                                                             |                                                                                   |
| Flt Protected           | 0.969                                                                             |                                                                                   |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1950                                                                              | 0                                                                                 | 0                                                                                 | 3532                                                                              | 3472                                                                              | 0                                                                                 |
| Flt Permitted           | 0.969                                                                             |                                                                                   |                                                                                   | 0.827                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1950                                                                              | 0                                                                                 | 0                                                                                 | 2927                                                                              | 3472                                                                              | 0                                                                                 |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |
| Satd. Flow (RTOR)       | 36                                                                                |                                                                                   |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 347                                                                               |                                                                                   |                                                                                   | 293                                                                               | 336                                                                               |                                                                                   |
| Travel Time (s)         | 9.5                                                                               |                                                                                   |                                                                                   | 6.7                                                                               | 7.6                                                                               |                                                                                   |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              |
| Adj. Flow (vph)         | 169                                                                               | 91                                                                                | 41                                                                                | 802                                                                               | 1207                                                                              | 171                                                                               |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 260                                                                               | 0                                                                                 | 0                                                                                 | 843                                                                               | 1378                                                                              | 0                                                                                 |
| Turn Type               | Prot                                                                              |                                                                                   | pm+pt                                                                             | NA                                                                                | NA                                                                                |                                                                                   |
| Protected Phases        | 4                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                 | 6                                                                                 |                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Detector Phase          | 4                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                 | 6                                                                                 |                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)     | 9.0                                                                               |                                                                                   | 3.0                                                                               | 15.0                                                                              | 15.0                                                                              |                                                                                   |
| Minimum Split (s)       | 13.0                                                                              |                                                                                   | 8.9                                                                               | 20.4                                                                              | 20.4                                                                              |                                                                                   |
| Total Split (s)         | 25.0                                                                              |                                                                                   | 14.0                                                                              | 50.0                                                                              | 36.0                                                                              |                                                                                   |
| Total Split (%)         | 33.3%                                                                             |                                                                                   | 18.7%                                                                             | 66.7%                                                                             | 48.0%                                                                             |                                                                                   |
| Yellow Time (s)         | 3.0                                                                               |                                                                                   | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               |                                                                                   |
| All-Red Time (s)        | 1.0                                                                               |                                                                                   | 1.7                                                                               | 1.2                                                                               | 1.2                                                                               |                                                                                   |
| Lost Time Adjust (s)    | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |
| Total Lost Time (s)     | 4.0                                                                               |                                                                                   |                                                                                   | 5.4                                                                               | 5.4                                                                               |                                                                                   |
| Lead/Lag                |                                                                                   |                                                                                   | Lag                                                                               |                                                                                   | Lead                                                                              |                                                                                   |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   | Yes                                                                               |                                                                                   |
| Recall Mode             | None                                                                              |                                                                                   | None                                                                              | C-Max                                                                             | C-Max                                                                             |                                                                                   |
| Act Effect Green (s)    | 13.4                                                                              |                                                                                   |                                                                                   | 52.2                                                                              | 52.2                                                                              |                                                                                   |
| Actuated g/C Ratio      | 0.18                                                                              |                                                                                   |                                                                                   | 0.70                                                                              | 0.70                                                                              |                                                                                   |
| v/c Ratio               | 0.69                                                                              |                                                                                   |                                                                                   | 0.41                                                                              | 0.57                                                                              |                                                                                   |
| Control Delay           | 34.0                                                                              |                                                                                   |                                                                                   | 4.5                                                                               | 5.5                                                                               |                                                                                   |
| Queue Delay             | 0.0                                                                               |                                                                                   |                                                                                   | 0.2                                                                               | 0.0                                                                               |                                                                                   |
| Total Delay             | 34.0                                                                              |                                                                                   |                                                                                   | 4.6                                                                               | 5.5                                                                               |                                                                                   |
| LOS                     | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |
| Approach Delay          | 34.0                                                                              |                                                                                   |                                                                                   | 4.6                                                                               | 5.5                                                                               |                                                                                   |
| Approach LOS            | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |
| Queue Length 50th (ft)  | 99                                                                                |                                                                                   |                                                                                   | 66                                                                                | 237                                                                               |                                                                                   |
| Queue Length 95th (ft)  | 135                                                                               |                                                                                   |                                                                                   | 84                                                                                | 31                                                                                |                                                                                   |
| Internal Link Dist (ft) | 267                                                                               |                                                                                   |                                                                                   | 213                                                                               | 256                                                                               |                                                                                   |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

103: Route 58 (Black Rock Turnpike) & Brookside Drive  
Lanes, Volumes, Timings

2040 Background Conditions

Timing Plan: Weekday PM Peak

|                        |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Base Capacity (vph)    | 571                                                                               |                                                                                   |                                                                                   | 2037                                                                              | 2425                                                                              |                                                                                   |
| Starvation Cap Reductn | 0                                                                                 |                                                                                   |                                                                                   | 408                                                                               | 0                                                                                 |                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |
| Storage Cap Reductn    | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |
| Reduced v/c Ratio      | 0.46                                                                              |                                                                                   |                                                                                   | 0.52                                                                              | 0.57                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 45 (60%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 8.2

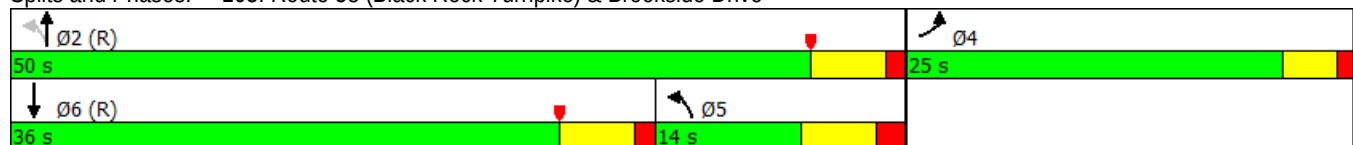
Intersection LOS: A

Intersection Capacity Utilization 70.9%

ICU Level of Service C

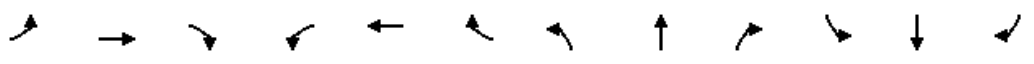
Analysis Period (min) 15

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive



# 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairview Road Conditions Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |                                                                                   |                                                                                   |       |                                                                                   |                                                                                   |       |                                                                                     |      |       |                                                                                     |                                                                                     |
|-------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------|------|-------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                                | EBT                                                                               | EBR                                                                               | WBL   | WBT                                                                               | WBR                                                                               | NBL   | NBT                                                                                 | NBR  | SBL   | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                    |  |  |       |  |  |       |  |      |       |  |  |
| Traffic Volume (vph)    | 29                                                                                 | 18                                                                                | 46                                                                                | 69    | 15                                                                                | 110                                                                               | 47    | 706                                                                                 | 90   | 292   | 918                                                                                 | 37                                                                                  |
| Future Volume (vph)     | 29                                                                                 | 18                                                                                | 46                                                                                | 69    | 15                                                                                | 110                                                                               | 47    | 706                                                                                 | 90   | 292   | 918                                                                                 | 37                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                               | 1900                                                                              | 1900                                                                              | 1900  | 1900                                                                              | 1900                                                                              | 1900  | 1900                                                                                | 1900 | 1900  | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                 | 12                                                                                | 12                                                                                | 12    | 12                                                                                | 11                                                                                | 12    | 11                                                                                  | 12   | 12    | 11                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 0                                                                                  |                                                                                   | 0                                                                                 | 0     |                                                                                   | 75                                                                                | 0     |                                                                                     | 0    | 0     |                                                                                     | 0                                                                                   |
| Storage Lanes           | 0                                                                                  |                                                                                   | 1                                                                                 | 0     |                                                                                   | 1                                                                                 | 0     |                                                                                     | 0    | 0     |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 25                                                                                 |                                                                                   |                                                                                   | 25    |                                                                                   |                                                                                   | 25    |                                                                                     |      | 25    |                                                                                     |                                                                                     |
| Lane Util. Factor       | 1.00                                                                               | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                              | 1.00                                                                              | 0.95  | 0.95                                                                                | 0.95 | 0.95  | 0.95                                                                                | 0.95                                                                                |
| Frt                     |                                                                                    |                                                                                   | 0.850                                                                             |       |                                                                                   | 0.850                                                                             |       | 0.984                                                                               |      |       | 0.996                                                                               |                                                                                     |
| Flt Protected           |                                                                                    | 0.970                                                                             |                                                                                   |       | 0.961                                                                             |                                                                                   |       | 0.997                                                                               |      |       | 0.988                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                  | 1807                                                                              | 1583                                                                              | 0     | 1790                                                                              | 1531                                                                              | 0     | 3356                                                                                | 0    | 0     | 3367                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                    | 0.789                                                                             |                                                                                   |       | 0.724                                                                             |                                                                                   |       | 0.812                                                                               |      |       | 0.598                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                  | 1470                                                                              | 1583                                                                              | 0     | 1349                                                                              | 1531                                                                              | 0     | 2734                                                                                | 0    | 0     | 2038                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                    |                                                                                   | Yes                                                                               |       |                                                                                   | No                                                                                |       |                                                                                     | Yes  |       |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                    |                                                                                   | 128                                                                               |       |                                                                                   |                                                                                   |       | 21                                                                                  |      |       | 7                                                                                   |                                                                                     |
| Link Speed (mph)        |                                                                                    | 30                                                                                |                                                                                   |       | 25                                                                                |                                                                                   |       | 30                                                                                  |      |       | 30                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                    | 87                                                                                |                                                                                   |       | 499                                                                               |                                                                                   |       | 713                                                                                 |      |       | 293                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                    | 2.0                                                                               |                                                                                   |       | 13.6                                                                              |                                                                                   |       | 16.2                                                                                |      |       | 6.7                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.80                                                                               | 0.80                                                                              | 0.80                                                                              | 0.80  | 0.80                                                                              | 0.80                                                                              | 0.93  | 0.93                                                                                | 0.93 | 0.98  | 0.98                                                                                | 0.98                                                                                |
| Adj. Flow (vph)         | 36                                                                                 | 23                                                                                | 58                                                                                | 86    | 19                                                                                | 138                                                                               | 51    | 759                                                                                 | 97   | 298   | 937                                                                                 | 38                                                                                  |
| Shared Lane Traffic (%) |                                                                                    |                                                                                   |                                                                                   |       |                                                                                   |                                                                                   |       |                                                                                     |      |       |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                  | 59                                                                                | 58                                                                                | 0     | 105                                                                               | 138                                                                               | 0     | 907                                                                                 | 0    | 0     | 1273                                                                                | 0                                                                                   |
| Turn Type               | Perm                                                                               | NA                                                                                | Perm                                                                              | Perm  | NA                                                                                | Perm                                                                              | Perm  | NA                                                                                  |      | pm+pt | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                    | 4                                                                                 |                                                                                   |       | 8                                                                                 |                                                                                   |       | 2                                                                                   |      | 1     | 6                                                                                   |                                                                                     |
| Permitted Phases        | 4                                                                                  |                                                                                   | 4                                                                                 | 8     |                                                                                   | 8                                                                                 | 2     |                                                                                     |      | 6     |                                                                                     |                                                                                     |
| Detector Phase          | 4                                                                                  | 4                                                                                 | 4                                                                                 | 8     | 8                                                                                 | 8                                                                                 | 2     | 2                                                                                   |      | 1     | 6                                                                                   |                                                                                     |
| Switch Phase            |                                                                                    |                                                                                   |                                                                                   |       |                                                                                   |                                                                                   |       |                                                                                     |      |       |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 9.0                                                                                | 9.0                                                                               | 9.0                                                                               | 9.0   | 9.0                                                                               | 9.0                                                                               | 15.0  | 15.0                                                                                |      | 3.0   | 15.0                                                                                |                                                                                     |
| Minimum Split (s)       | 13.0                                                                               | 13.0                                                                              | 13.0                                                                              | 13.0  | 13.0                                                                              | 13.0                                                                              | 20.3  | 20.3                                                                                |      | 9.5   | 20.3                                                                                |                                                                                     |
| Total Split (s)         | 25.0                                                                               | 25.0                                                                              | 25.0                                                                              | 25.0  | 25.0                                                                              | 25.0                                                                              | 36.0  | 36.0                                                                                |      | 14.0  | 50.0                                                                                |                                                                                     |
| Total Split (%)         | 33.3%                                                                              | 33.3%                                                                             | 33.3%                                                                             | 33.3% | 33.3%                                                                             | 33.3%                                                                             | 48.0% | 48.0%                                                                               |      | 18.7% | 66.7%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.0                                                                                | 3.0                                                                               | 3.0                                                                               | 3.0   | 3.0                                                                               | 3.0                                                                               | 4.3   | 4.3                                                                                 |      | 4.3   | 4.3                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.0                                                                                | 1.0                                                                               | 1.0                                                                               | 1.0   | 1.0                                                                               | 1.0                                                                               | 1.0   | 1.0                                                                                 |      | 2.2   | 1.0                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                    | 0.0                                                                               | 0.0                                                                               |       | 0.0                                                                               | 0.0                                                                               |       | 0.0                                                                                 |      |       | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                    | 4.0                                                                               | 4.0                                                                               |       | 4.0                                                                               | 4.0                                                                               |       | 5.3                                                                                 |      |       | 5.3                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                    |                                                                                   |                                                                                   |       |                                                                                   |                                                                                   | Lead  | Lead                                                                                |      | Lag   |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                    |                                                                                   |                                                                                   |       |                                                                                   |                                                                                   | Yes   | Yes                                                                                 |      | Yes   |                                                                                     |                                                                                     |
| Recall Mode             | None                                                                               | None                                                                              | None                                                                              | None  | None                                                                              | None                                                                              | C-Max | C-Max                                                                               |      | None  | C-Max                                                                               |                                                                                     |
| Act Effct Green (s)     |                                                                                    | 11.7                                                                              | 11.7                                                                              |       | 11.7                                                                              | 11.7                                                                              |       | 54.0                                                                                |      |       | 54.0                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                    | 0.16                                                                              | 0.16                                                                              |       | 0.16                                                                              | 0.16                                                                              |       | 0.72                                                                                |      |       | 0.72                                                                                |                                                                                     |
| v/c Ratio               |                                                                                    | 0.26                                                                              | 0.16                                                                              |       | 0.50                                                                              | 0.58                                                                              |       | 0.46                                                                                |      |       | 0.87                                                                                |                                                                                     |
| Control Delay           |                                                                                    | 29.5                                                                              | 1.0                                                                               |       | 36.7                                                                              | 38.8                                                                              |       | 5.6                                                                                 |      |       | 13.6                                                                                |                                                                                     |
| Queue Delay             |                                                                                    | 0.0                                                                               | 0.0                                                                               |       | 0.0                                                                               | 0.0                                                                               |       | 0.0                                                                                 |      |       | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                    | 29.5                                                                              | 1.0                                                                               |       | 36.7                                                                              | 38.8                                                                              |       | 5.6                                                                                 |      |       | 13.6                                                                                |                                                                                     |
| LOS                     |                                                                                    | C                                                                                 | A                                                                                 |       | D                                                                                 | D                                                                                 |       | A                                                                                   |      |       | B                                                                                   |                                                                                     |
| Approach Delay          |                                                                                    | 15.4                                                                              |                                                                                   |       | 37.9                                                                              |                                                                                   |       | 5.6                                                                                 |      |       | 13.6                                                                                |                                                                                     |
| Approach LOS            |                                                                                    | B                                                                                 |                                                                                   |       | D                                                                                 |                                                                                   |       | A                                                                                   |      |       | B                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                    | 25                                                                                | 0                                                                                 |       | 46                                                                                | 61                                                                                |       | 69                                                                                  |      |       | 126                                                                                 |                                                                                     |

# 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road Conditions Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 47                                                                                | 0                                                                                 |                                                                                   | 75                                                                                | 93                                                                                |                                                                                    | 132                                                                                 |                                                                                     |                                                                                     | #443                                                                                |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 7                                                                                 |                                                                                   |                                                                                   | 419                                                                               |                                                                                   |                                                                                    | 633                                                                                 |                                                                                     |                                                                                     | 213                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 75                                                                                |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 411                                                                               | 535                                                                               |                                                                                   | 377                                                                               | 428                                                                               |                                                                                    | 1974                                                                                |                                                                                     |                                                                                     | 1469                                                                                |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.14                                                                              | 0.11                                                                              |                                                                                   | 0.28                                                                              | 0.32                                                                              |                                                                                    | 0.46                                                                                |                                                                                     |                                                                                     | 0.87                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 48 (64%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 13.1

Intersection LOS: B

Intersection Capacity Utilization 82.2%

ICU Level of Service E

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road

|                                                                                            |                                                                                          |                                                                                          |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø2 (R) |  Ø1   |  Ø4 |
| 36 s                                                                                       | 14 s                                                                                     | 25 s                                                                                     |
|  Ø6 (R) |  Ø8 |                                                                                          |
| 50 s                                                                                       | 25 s                                                                                     |                                                                                          |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Background Conditions

## Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |       |      |       |       |      |       |       |      |       |       |      |
|-------------------------|------------------------------------------------------------------------------------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|
| Lane Group              | EBL                                                                                | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
| Lane Configurations     |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Traffic Volume (vph)    | 90                                                                                 | 791   | 157  | 148   | 625   | 131  | 232   | 279   | 177  | 189   | 270   | 44   |
| Future Volume (vph)     | 90                                                                                 | 791   | 157  | 148   | 625   | 131  | 232   | 279   | 177  | 189   | 270   | 44   |
| Ideal Flow (vphpl)      | 1900                                                                               | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 11                                                                                 | 11    | 12   | 11    | 12    | 12   | 11    | 11    | 12   | 12    | 12    | 12   |
| Storage Length (ft)     | 200                                                                                |       | 0    | 175   |       | 0    | 210   |       | 0    | 170   |       | 0    |
| Storage Lanes           | 1                                                                                  |       | 0    | 1     |       | 0    | 1     |       | 0    | 1     |       | 0    |
| Taper Length (ft)       | 85                                                                                 |       |      | 75    |       |      | 100   |       |      | 100   |       |      |
| Lane Util. Factor       | 1.00                                                                               | 0.95  | 0.95 | 1.00  | 0.95  | 0.95 | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 |
| Frt                     |                                                                                    | 0.975 |      |       | 0.974 |      |       | 0.942 |      |       | 0.979 |      |
| Flt Protected           | 0.950                                                                              |       |      | 0.950 |       |      | 0.950 |       |      | 0.950 |       |      |
| Satd. Flow (prot)       | 1711                                                                               | 3336  | 0    | 1711  | 3447  | 0    | 1711  | 1696  | 0    | 1770  | 1824  | 0    |
| Flt Permitted           | 0.950                                                                              |       |      | 0.950 |       |      | 0.240 |       |      | 0.133 |       |      |
| Satd. Flow (perm)       | 1711                                                                               | 3336  | 0    | 1711  | 3447  | 0    | 432   | 1696  | 0    | 248   | 1824  | 0    |
| Right Turn on Red       |                                                                                    |       | Yes  |       |       | Yes  |       |       | Yes  |       |       | No   |
| Satd. Flow (RTOR)       |                                                                                    | 14    |      |       | 15    |      |       | 19    |      |       |       |      |
| Link Speed (mph)        |                                                                                    | 30    |      |       | 30    |      |       | 30    |      |       | 25    |      |
| Link Distance (ft)      |                                                                                    | 436   |      |       | 368   |      |       | 438   |      |       | 355   |      |
| Travel Time (s)         |                                                                                    | 9.9   |      |       | 8.4   |      |       | 10.0  |      |       | 9.7   |      |
| Peak Hour Factor        | 0.94                                                                               | 0.94  | 0.94 | 0.97  | 0.97  | 0.97 | 0.89  | 0.89  | 0.89 | 0.87  | 0.87  | 0.87 |
| Adj. Flow (vph)         | 96                                                                                 | 841   | 167  | 153   | 644   | 135  | 261   | 313   | 199  | 217   | 310   | 51   |
| Shared Lane Traffic (%) |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 96                                                                                 | 1008  | 0    | 153   | 779   | 0    | 261   | 512   | 0    | 217   | 361   | 0    |
| Turn Type               | Prot                                                                               | NA    |      | Prot  | NA    |      | pm+pt | NA    |      | pm+pt | NA    |      |
| Protected Phases        | 5                                                                                  | 2     |      | 1     | 6     |      | 7     | 4     |      | 3     | 8     |      |
| Permitted Phases        |                                                                                    |       |      |       |       |      | 4     |       |      | 8     |       |      |
| Detector Phase          | 5                                                                                  | 2     |      | 1     | 6     |      | 7     | 4     |      | 3     | 8     |      |
| Switch Phase            |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Minimum Initial (s)     | 5.0                                                                                | 15.0  |      | 5.0   | 15.0  |      | 5.0   | 10.0  |      | 5.0   | 10.0  |      |
| Minimum Split (s)       | 9.7                                                                                | 21.6  |      | 9.7   | 21.6  |      | 9.3   | 16.8  |      | 9.3   | 16.8  |      |
| Total Split (s)         | 17.7                                                                               | 41.6  |      | 17.7  | 41.6  |      | 22.3  | 36.8  |      | 22.3  | 36.8  |      |
| Total Split (%)         | 11.7%                                                                              | 27.5% |      | 11.7% | 27.5% |      | 14.7% | 24.3% |      | 14.7% | 24.3% |      |
| Yellow Time (s)         | 3.0                                                                                | 4.1   |      | 3.0   | 4.1   |      | 3.3   | 4.4   |      | 3.3   | 4.4   |      |
| All-Red Time (s)        | 1.7                                                                                | 2.5   |      | 1.7   | 2.5   |      | 1.0   | 2.4   |      | 1.0   | 2.4   |      |
| Lost Time Adjust (s)    | 0.0                                                                                | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      |
| Total Lost Time (s)     | 4.7                                                                                | 6.6   |      | 4.7   | 6.6   |      | 4.3   | 6.8   |      | 4.3   | 6.8   |      |
| Lead/Lag                | Lead                                                                               | Lag   |      | Lead  | Lag   |      | Lead  | Lag   |      | Lead  | Lag   |      |
| Lead-Lag Optimize?      | Yes                                                                                | Yes   |      | Yes   | Yes   |      | Yes   | Yes   |      | Yes   | Yes   |      |
| Recall Mode             | None                                                                               | Min   |      | None  | Min   |      | None  | None  |      | None  | None  |      |
| Act Effct Green (s)     | 10.6                                                                               | 35.0  |      | 13.0  | 37.4  |      | 52.9  | 33.2  |      | 47.3  | 30.0  |      |
| Actuated g/C Ratio      | 0.09                                                                               | 0.30  |      | 0.11  | 0.32  |      | 0.45  | 0.28  |      | 0.40  | 0.25  |      |
| v/c Ratio               | 0.63                                                                               | 1.01  |      | 0.82  | 0.71  |      | 0.67  | 1.05  |      | 0.75  | 0.78  |      |
| Control Delay           | 69.6                                                                               | 72.6  |      | 83.4  | 39.7  |      | 29.8  | 94.7  |      | 41.4  | 54.4  |      |
| Queue Delay             | 0.0                                                                                | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      |
| Total Delay             | 69.6                                                                               | 72.6  |      | 83.4  | 39.7  |      | 29.8  | 94.7  |      | 41.4  | 54.4  |      |
| LOS                     | E                                                                                  | E     |      | F     | D     |      | C     | F     |      | D     | D     |      |
| Approach Delay          |                                                                                    | 72.3  |      |       | 46.9  |      |       | 72.8  |      |       | 49.5  |      |
| Approach LOS            |                                                                                    | E     |      |       | D     |      |       | E     |      |       | D     |      |
| Queue Length 50th (ft)  | 72                                                                                 | ~410  |      | 116   | 272   |      | 123   | ~417  |      | 103   | 258   |      |



# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Background Conditions Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |      |
|-------------------------|------|
| Lane Group              | Ø9   |
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 33.0 |
| Total Split (s)         | 33.0 |
| Total Split (%)         | 22%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Background Conditions Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  | 128                                                                               | #556                                                                              |                                                                                   | #231                                                                              | 353                                                                               |                                                                                   | 184                                                                                | #655                                                                                |                                                                                     | 174                                                                                 | #358                                                                                |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 356                                                                               |                                                                                   |                                                                                   | 288                                                                               |                                                                                   |                                                                                    | 358                                                                                 |                                                                                     |                                                                                     | 275                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 200                                                                               |                                                                                   |                                                                                   | 175                                                                               |                                                                                   |                                                                                   | 210                                                                                |                                                                                     |                                                                                     | 170                                                                                 |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 187                                                                               | 996                                                                               |                                                                                   | 187                                                                               | 1098                                                                              |                                                                                   | 387                                                                                | 488                                                                                 |                                                                                     | 337                                                                                 | 462                                                                                 |                                                                                     |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       | 0.51                                                                              | 1.01                                                                              |                                                                                   | 0.82                                                                              | 0.71                                                                              |                                                                                   | 0.67                                                                               | 1.05                                                                                |                                                                                     | 0.64                                                                                | 0.78                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 151.4

Actuated Cycle Length: 118.4

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 61.5

Intersection LOS: E

Intersection Capacity Utilization 89.7%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)

|                                                                                        |                                                                                        |                                                                                        |                                                                                         |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø9 |  Ø3 |  Ø4 |
| 17.7 s                                                                                 | 41.6 s                                                                                 | 33 s                                                                                   | 22.3 s                                                                                  | 36.8 s                                                                                   |
|  Ø5 |  Ø6 |                                                                                        |  Ø7 |  Ø8 |
| 17.7 s                                                                                 | 41.6 s                                                                                 |                                                                                        | 22.3 s                                                                                  | 36.8 s                                                                                   |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø9 |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway/2040 Back St (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |  |
| Traffic Volume (vph)    | 74                                                                                | 875                                                                               | 22                                                                                | 77                                                                                | 678                                                                               | 62                                                                                | 173                                                                                | 12                                                                                  | 115                                                                                 | 48                                                                                  | 5                                                                                   | 31                                                                                  |
| Future Volume (vph)     | 74                                                                                | 875                                                                               | 22                                                                                | 77                                                                                | 678                                                                               | 62                                                                                | 173                                                                                | 12                                                                                  | 115                                                                                 | 48                                                                                  | 5                                                                                   | 31                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                 | 13                                                                                  | 13                                                                                  | 12                                                                                  | 13                                                                                  | 13                                                                                  |
| Storage Length (ft)     | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 25                                                                                  | 0                                                                                   |                                                                                     | 25                                                                                  |
| Storage Lanes           | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 1                                                                                   | 0                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)       | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                   | 0.989                                                                             |                                                                                   |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected           |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                    | 0.955                                                                               |                                                                                     |                                                                                     | 0.957                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3397                                                                              | 0                                                                                 | 0                                                                                 | 3367                                                                              | 0                                                                                 | 0                                                                                  | 1838                                                                                | 1636                                                                                | 0                                                                                   | 1842                                                                                | 1636                                                                                |
| Flt Permitted           |                                                                                   | 0.736                                                                             |                                                                                   |                                                                                   | 0.731                                                                             |                                                                                   |                                                                                    | 0.695                                                                               |                                                                                     |                                                                                     | 0.685                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 2510                                                                              | 0                                                                                 | 0                                                                                 | 2473                                                                              | 0                                                                                 | 0                                                                                  | 1338                                                                                | 1636                                                                                | 0                                                                                   | 1319                                                                                | 1636                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 12                                                                                |                                                                                   |                                                                                    |                                                                                     | 157                                                                                 |                                                                                     |                                                                                     | 157                                                                                 |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 442                                                                               |                                                                                   |                                                                                   | 502                                                                               |                                                                                   |                                                                                    | 142                                                                                 |                                                                                     |                                                                                     | 135                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                    | 3.9                                                                                 |                                                                                     |                                                                                     | 3.7                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.84                                                                               | 0.84                                                                                | 0.84                                                                                | 0.85                                                                                | 0.85                                                                                | 0.85                                                                                |
| Adj. Flow (vph)         | 80                                                                                | 941                                                                               | 24                                                                                | 86                                                                                | 753                                                                               | 69                                                                                | 206                                                                                | 14                                                                                  | 137                                                                                 | 56                                                                                  | 6                                                                                   | 36                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 1045                                                                              | 0                                                                                 | 0                                                                                 | 908                                                                               | 0                                                                                 | 0                                                                                  | 220                                                                                 | 137                                                                                 | 0                                                                                   | 62                                                                                  | 36                                                                                  |
| Turn Type               | pm+pt                                                                             | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  | Perm                                                                                | Perm                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases        | 1                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                  |                                                                                     | 4                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   |
| Detector Phase          | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                  | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0                                                                                | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |
| Minimum Split (s)       | 9.0                                                                               | 20.8                                                                              |                                                                                   | 20.8                                                                              | 20.8                                                                              |                                                                                   | 11.0                                                                               | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                |
| Total Split (s)         | 9.0                                                                               | 39.0                                                                              |                                                                                   | 30.0                                                                              | 30.0                                                                              |                                                                                   | 14.0                                                                               | 14.0                                                                                | 14.0                                                                                | 14.0                                                                                | 14.0                                                                                | 14.0                                                                                |
| Total Split (%)         | 12.0%                                                                             | 52.0%                                                                             |                                                                                   | 40.0%                                                                             | 40.0%                                                                             |                                                                                   | 18.7%                                                                              | 18.7%                                                                               | 18.7%                                                                               | 18.7%                                                                               | 18.7%                                                                               | 18.7%                                                                               |
| Yellow Time (s)         | 3.0                                                                               | 4.3                                                                               |                                                                                   | 4.3                                                                               | 4.3                                                                               |                                                                                   | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| All-Red Time (s)        | 1.0                                                                               | 1.5                                                                               |                                                                                   | 1.5                                                                               | 1.5                                                                               |                                                                                   | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     |                                                                                   | 5.8                                                                               |                                                                                   |                                                                                   | 5.8                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 | 4.0                                                                                 |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |
| Lead/Lag                | Lead                                                                              |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               |                                                                                   | Lag                                                                                | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode             | Min                                                                               | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Act Effct Green (s)     |                                                                                   | 42.8                                                                              |                                                                                   |                                                                                   | 33.3                                                                              |                                                                                   |                                                                                    | 22.4                                                                                | 22.4                                                                                |                                                                                     | 22.4                                                                                | 22.4                                                                                |
| Actuated g/C Ratio      |                                                                                   | 0.57                                                                              |                                                                                   |                                                                                   | 0.44                                                                              |                                                                                   |                                                                                    | 0.30                                                                                | 0.30                                                                                |                                                                                     | 0.30                                                                                | 0.30                                                                                |
| v/c Ratio               |                                                                                   | 0.71                                                                              |                                                                                   |                                                                                   | 0.82                                                                              |                                                                                   |                                                                                    | 0.55                                                                                | 0.23                                                                                |                                                                                     | 0.16                                                                                | 0.06                                                                                |
| Control Delay           |                                                                                   | 14.1                                                                              |                                                                                   |                                                                                   | 16.6                                                                              |                                                                                   |                                                                                    | 28.8                                                                                | 4.0                                                                                 |                                                                                     | 21.4                                                                                | 0.2                                                                                 |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             |                                                                                   | 14.1                                                                              |                                                                                   |                                                                                   | 16.6                                                                              |                                                                                   |                                                                                    | 28.8                                                                                | 4.0                                                                                 |                                                                                     | 21.4                                                                                | 0.2                                                                                 |
| LOS                     |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | C                                                                                   | A                                                                                   |                                                                                     | C                                                                                   | A                                                                                   |
| Approach Delay          |                                                                                   | 14.1                                                                              |                                                                                   |                                                                                   | 16.6                                                                              |                                                                                   |                                                                                    | 19.3                                                                                |                                                                                     |                                                                                     | 13.6                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 136                                                                               |                                                                                   |                                                                                   | 70                                                                                |                                                                                   |                                                                                    | 88                                                                                  | 0                                                                                   |                                                                                     | 22                                                                                  | 0                                                                                   |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway 2040 Backgr (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

| Lane Group              | Ø3   |
|-------------------------|------|
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 3    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 22.0 |
| Total Split (s)         | 22.0 |
| Total Split (%)         | 29%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                | Lead |
| Lead-Lag Optimize?      | Yes  |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |



# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 191                                                                               |                                                                                   |                                                                                   | #98                                                                               |                                                                                   |                                                                                    | 142                                                                                 | 24                                                                                  |                                                                                     | 47                                                                                  | 0                                                                                   |
| Internal Link Dist (ft) |                                                                                   | 362                                                                               |                                                                                   |                                                                                   | 422                                                                               |                                                                                   |                                                                                    | 62                                                                                  |                                                                                     |                                                                                     | 55                                                                                  |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |
| Base Capacity (vph)     |                                                                                   | 1477                                                                              |                                                                                   |                                                                                   | 1104                                                                              |                                                                                   |                                                                                    | 399                                                                                 | 599                                                                                 |                                                                                     | 394                                                                                 | 599                                                                                 |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       |                                                                                   | 0.71                                                                              |                                                                                   |                                                                                   | 0.82                                                                              |                                                                                   |                                                                                    | 0.55                                                                                | 0.23                                                                                |                                                                                     | 0.16                                                                                | 0.06                                                                                |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 19 (25%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 15.8

Intersection LOS: B

Intersection Capacity Utilization 79.9%

ICU Level of Service D

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                            |                                                                                        |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø3 |  Ø4 |
| 9 s                                                                                        | 30 s                                                                                       | 22 s                                                                                   | 14 s                                                                                     |
|  Ø6 (R) |                                                                                            |                                                                                        |                                                                                          |
| 39 s                                                                                       |                                                                                            |                                                                                        |                                                                                          |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø3 |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |

# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) Background Conditions Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |  |  |  |                                                                                     |
| Traffic Volume (vph)    | 11                                                                                | 989                                                                               | 107                                                                               | 48                                                                                | 765                                                                               | 2                                                                                 | 106                                                                                | 3                                                                                   | 67                                                                                  | 1                                                                                   | 3                                                                                   | 10                                                                                  |
| Future Volume (vph)     | 11                                                                                | 989                                                                               | 107                                                                               | 48                                                                                | 765                                                                               | 2                                                                                 | 106                                                                                | 3                                                                                   | 67                                                                                  | 1                                                                                   | 3                                                                                   | 10                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                 | 10                                                                                  | 10                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 250                                                                                 | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes           | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.986                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     | 0.885                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.999                                                                             |                                                                                   |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                    | 0.954                                                                               |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3370                                                                              | 0                                                                                 | 0                                                                                 | 3411                                                                              | 0                                                                                 | 0                                                                                  | 1659                                                                                | 1478                                                                                | 1770                                                                                | 1649                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.948                                                                             |                                                                                   |                                                                                   | 0.807                                                                             |                                                                                   |                                                                                    | 0.720                                                                               |                                                                                     | 0.652                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 3198                                                                              | 0                                                                                 | 0                                                                                 | 2761                                                                              | 0                                                                                 | 0                                                                                  | 1252                                                                                | 1478                                                                                | 1215                                                                                | 1649                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 31                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 111                                                                                 |                                                                                     | 13                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 502                                                                               |                                                                                   |                                                                                   | 407                                                                               |                                                                                   |                                                                                    | 423                                                                                 |                                                                                     |                                                                                     | 198                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                    | 11.5                                                                                |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.82                                                                               | 0.82                                                                                | 0.82                                                                                | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                |
| Adj. Flow (vph)         | 12                                                                                | 1063                                                                              | 115                                                                               | 50                                                                                | 797                                                                               | 2                                                                                 | 129                                                                                | 4                                                                                   | 82                                                                                  | 1                                                                                   | 4                                                                                   | 13                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 1190                                                                              | 0                                                                                 | 0                                                                                 | 849                                                                               | 0                                                                                 | 0                                                                                  | 133                                                                                 | 82                                                                                  | 1                                                                                   | 17                                                                                  | 0                                                                                   |
| Turn Type               | pm+pt                                                                             | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  | Perm                                                                                | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        | 1                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                  |                                                                                     | 4                                                                                   | 4                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                  | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 3.0                                                                               | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0                                                                                | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 7.3                                                                               | 21.3                                                                              |                                                                                   | 21.3                                                                              | 21.3                                                                              |                                                                                   | 11.9                                                                               | 11.9                                                                                | 11.9                                                                                | 11.9                                                                                | 11.9                                                                                |                                                                                     |
| Total Split (s)         | 7.3                                                                               | 55.0                                                                              |                                                                                   | 47.7                                                                              | 47.7                                                                              |                                                                                   | 20.0                                                                               | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                |                                                                                     |
| Total Split (%)         | 9.7%                                                                              | 73.3%                                                                             |                                                                                   | 63.6%                                                                             | 63.6%                                                                             |                                                                                   | 26.7%                                                                              | 26.7%                                                                               | 26.7%                                                                               | 26.7%                                                                               | 26.7%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.3                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.0                                                                               | 1.3                                                                               |                                                                                   | 1.3                                                                               | 1.3                                                                               |                                                                                   | 1.9                                                                                | 1.9                                                                                 | 1.9                                                                                 | 1.9                                                                                 | 1.9                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 6.3                                                                               |                                                                                   |                                                                                   | 6.3                                                                               |                                                                                   |                                                                                    | 4.9                                                                                 | 4.9                                                                                 | 4.9                                                                                 | 4.9                                                                                 |                                                                                     |
| Lead/Lag                | Lead                                                                              |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | Max                                                                               | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 54.8                                                                              |                                                                                   |                                                                                   | 41.4                                                                              |                                                                                   |                                                                                    | 11.3                                                                                | 11.3                                                                                | 11.3                                                                                | 11.3                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.73                                                                              |                                                                                   |                                                                                   | 0.55                                                                              |                                                                                   |                                                                                    | 0.15                                                                                | 0.15                                                                                | 0.15                                                                                | 0.15                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.50                                                                              |                                                                                   |                                                                                   | 0.56                                                                              |                                                                                   |                                                                                    | 0.70                                                                                | 0.26                                                                                | 0.01                                                                                | 0.07                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 3.5                                                                               |                                                                                   |                                                                                   | 7.1                                                                               |                                                                                   |                                                                                    | 49.6                                                                                | 5.3                                                                                 | 25.0                                                                                | 15.6                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.1                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 3.6                                                                               |                                                                                   |                                                                                   | 7.1                                                                               |                                                                                   |                                                                                    | 49.6                                                                                | 5.3                                                                                 | 25.0                                                                                | 15.6                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | D                                                                                   | A                                                                                   | C                                                                                   | B                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 3.6                                                                               |                                                                                   |                                                                                   | 7.1                                                                               |                                                                                   |                                                                                    | 32.7                                                                                |                                                                                     |                                                                                     | 16.2                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 57                                                                                |                                                                                   |                                                                                   | 46                                                                                |                                                                                   |                                                                                    | 59                                                                                  | 0                                                                                   | 0                                                                                   | 2                                                                                   |                                                                                     |

# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) Background Conditions Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 82                                                                                |                                                                                   |                                                                                   | 56                                                                                |                                                                                   |                                                                                    | 98                                                                                  | 16                                                                                  | 4                                                                                   | 15                                                                                  |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 422                                                                               |                                                                                   |                                                                                   | 327                                                                               |                                                                                   |                                                                                    | 343                                                                                 |                                                                                     |                                                                                     | 118                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 250                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 2363                                                                              |                                                                                   |                                                                                   | 1524                                                                              |                                                                                   |                                                                                    | 252                                                                                 | 386                                                                                 | 244                                                                                 | 342                                                                                 |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 184                                                                               |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.55                                                                              |                                                                                   |                                                                                   | 0.56                                                                              |                                                                                   |                                                                                    | 0.53                                                                                | 0.21                                                                                | 0.00                                                                                | 0.05                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 21 (28%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 7.8

Intersection LOS: A

Intersection Capacity Utilization 79.3%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                           |                                                                                         |
|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|  Ø1      |  Ø2 (R) |  Ø4 |
| 7.3 s                                                                                      | 47.7 s                                                                                    | 20 s                                                                                    |
|  Ø6 (R) |                                                                                           |                                                                                         |
| 55 s                                                                                       |                                                                                           |                                                                                         |

## 108: Burroughs Road &amp; Route 58 (Black Rock Turnpike)

## 2040 Background Conditions

## Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 86                                                                                | 973                                                                               | 15                                                                                | 7                                                                                 | 746                                                                               | 156                                                                               | 18                                                                                | 110                                                                                 | 7                                                                                   | 129                                                                                 | 52                                                                                  | 52                                                                                  |
| Future Volume (vph)     | 86                                                                                | 973                                                                               | 15                                                                                | 7                                                                                 | 746                                                                               | 156                                                                               | 18                                                                                | 110                                                                                 | 7                                                                                   | 129                                                                                 | 52                                                                                  | 52                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 16                                                                                  | 12                                                                                  | 12                                                                                  | 16                                                                                  | 12                                                                                  |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   | 0.974                                                                             |                                                                                   |                                                                                   | 0.993                                                                               |                                                                                     |                                                                                     | 0.970                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.993                                                                               |                                                                                     |                                                                                     | 0.973                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3401                                                                              | 0                                                                                 | 0                                                                                 | 3332                                                                              | 0                                                                                 | 0                                                                                 | 2082                                                                                | 0                                                                                   | 0                                                                                   | 1992                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.772                                                                             |                                                                                   |                                                                                   | 0.946                                                                             |                                                                                   |                                                                                   | 0.940                                                                               |                                                                                     |                                                                                     | 0.735                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 2636                                                                              | 0                                                                                 | 0                                                                                 | 3152                                                                              | 0                                                                                 | 0                                                                                 | 1971                                                                                | 0                                                                                   | 0                                                                                   | 1505                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 3                                                                                 |                                                                                   |                                                                                   | 48                                                                                |                                                                                   |                                                                                   | 4                                                                                   |                                                                                     |                                                                                     | 21                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 407                                                                               |                                                                                   |                                                                                   | 996                                                                               |                                                                                   |                                                                                   | 466                                                                                 |                                                                                     |                                                                                     | 300                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                   | 22.6                                                                              |                                                                                   |                                                                                   | 12.7                                                                                |                                                                                     |                                                                                     | 8.2                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.99                                                                              | 0.99                                                                              | 0.99                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.90                                                                              | 0.90                                                                                | 0.90                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Adj. Flow (vph)         | 87                                                                                | 983                                                                               | 15                                                                                | 8                                                                                 | 811                                                                               | 170                                                                               | 20                                                                                | 122                                                                                 | 8                                                                                   | 139                                                                                 | 56                                                                                  | 56                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 1085                                                                              | 0                                                                                 | 0                                                                                 | 989                                                                               | 0                                                                                 | 0                                                                                 | 150                                                                                 | 0                                                                                   | 0                                                                                   | 251                                                                                 | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 6                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 4                                                                                   |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 15.0                                                                              | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 9.0                                                                               | 9.0                                                                                 |                                                                                     | 9.0                                                                                 | 9.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 20.6                                                                              | 20.6                                                                              |                                                                                   | 20.6                                                                              | 20.6                                                                              |                                                                                   | 14.4                                                                              | 14.4                                                                                |                                                                                     | 14.4                                                                                | 14.4                                                                                |                                                                                     |
| Total Split (s)         | 44.0                                                                              | 44.0                                                                              |                                                                                   | 44.0                                                                              | 44.0                                                                              |                                                                                   | 31.0                                                                              | 31.0                                                                                |                                                                                     | 31.0                                                                                | 31.0                                                                                |                                                                                     |
| Total Split (%)         | 58.7%                                                                             | 58.7%                                                                             |                                                                                   | 58.7%                                                                             | 58.7%                                                                             |                                                                                   | 41.3%                                                                             | 41.3%                                                                               |                                                                                     | 41.3%                                                                               | 41.3%                                                                               |                                                                                     |
| Yellow Time (s)         | 4.1                                                                               | 4.1                                                                               |                                                                                   | 4.1                                                                               | 4.1                                                                               |                                                                                   | 3.1                                                                               | 3.1                                                                                 |                                                                                     | 3.1                                                                                 | 3.1                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.5                                                                               | 1.5                                                                               |                                                                                   | 1.5                                                                               | 1.5                                                                               |                                                                                   | 2.3                                                                               | 2.3                                                                                 |                                                                                     | 2.3                                                                                 | 2.3                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   | 5.4                                                                                 |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | C-Max                                                                             | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                              | None                                                                                |                                                                                     | None                                                                                | None                                                                                |                                                                                     |
| Act Effct Green (s)     |                                                                                   | 48.3                                                                              |                                                                                   |                                                                                   | 48.3                                                                              |                                                                                   |                                                                                   | 15.7                                                                                |                                                                                     |                                                                                     | 15.7                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.64                                                                              |                                                                                   |                                                                                   | 0.64                                                                              |                                                                                   |                                                                                   | 0.21                                                                                |                                                                                     |                                                                                     | 0.21                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.64                                                                              |                                                                                   |                                                                                   | 0.48                                                                              |                                                                                   |                                                                                   | 0.36                                                                                |                                                                                     |                                                                                     | 0.76                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 6.6                                                                               |                                                                                   |                                                                                   | 8.3                                                                               |                                                                                   |                                                                                   | 25.7                                                                                |                                                                                     |                                                                                     | 39.5                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 6.6                                                                               |                                                                                   |                                                                                   | 8.3                                                                               |                                                                                   |                                                                                   | 25.7                                                                                |                                                                                     |                                                                                     | 39.5                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 6.6                                                                               |                                                                                   |                                                                                   | 8.3                                                                               |                                                                                   |                                                                                   | 25.7                                                                                |                                                                                     |                                                                                     | 39.5                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 44                                                                                |                                                                                   |                                                                                   | 102                                                                               |                                                                                   |                                                                                   | 58                                                                                  |                                                                                     |                                                                                     | 101                                                                                 |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 170                                                                               |                                                                                   |                                                                                   | 187                                                                               |                                                                                   |                                                                                   | 96                                                                                  |                                                                                     |                                                                                     | 159                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 327                                                                               |                                                                                   |                                                                                   | 916                                                                               |                                                                                   |                                                                                   | 386                                                                                 |                                                                                     |                                                                                     | 220                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# 108: Burroughs Road & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

2040 Background Conditions  
Timing Plan: Weekday PM Peak

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Base Capacity (vph)    | 1698                                                                              |                                                                                   |                                                                                   | 2046                                                                              |                                                                                   |                                                                                   | 675                                                                                |                                                                                     |                                                                                     | 527                                                                                 |                                                                                     |                                                                                     |
| Starvation Cap Reductn | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                  |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |
| Spillback Cap Reductn  | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                  |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |
| Storage Cap Reductn    | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                  |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |
| Reduced v/c Ratio      | 0.64                                                                              |                                                                                   |                                                                                   | 0.48                                                                              |                                                                                   |                                                                                   | 0.22                                                                               |                                                                                     |                                                                                     | 0.48                                                                                |                                                                                     |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 20 (27%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 11.8

Intersection LOS: B

Intersection Capacity Utilization 89.2%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)

|                                                                                          |                                                                                   |                                                                                    |
|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|  Ø2 (R) |  |   |
| 44 s                                                                                     | 31 s                                                                              |                                                                                    |
|  Ø6 (R) |  |  |
| 44 s                                                                                     | 31 s                                                                              |                                                                                    |

109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) 2049 Black Rock Turnpike  
 Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBT                                                                               | EBR                                                                               | EBR2                                                                              | WBL2                                                                              | WBL                                                                               | WBT                                                                               | WBR                                                                                | NWL2                                                                                | NWL                                                                                 | NWR                                                                                 | NWR2                                                                                | NEL                                                                                 |
| Lane Configurations     |  |  |                                                                                   |                                                                                   |                                                                                   |  |                                                                                    |                                                                                     |  |                                                                                     |                                                                                     |                                                                                     |
| Traffic Volume (vph)    | 545                                                                               | 555                                                                               | 3                                                                                 | 22                                                                                | 8                                                                                 | 383                                                                               | 2                                                                                  | 2                                                                                   | 479                                                                                 | 5                                                                                   | 40                                                                                  | 7                                                                                   |
| Future Volume (vph)     | 545                                                                               | 555                                                                               | 3                                                                                 | 22                                                                                | 8                                                                                 | 383                                                                               | 2                                                                                  | 2                                                                                   | 479                                                                                 | 5                                                                                   | 40                                                                                  | 7                                                                                   |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 11                                                                                | 12                                                                                 | 12                                                                                  | 10                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                               | 0.95                                                                                | 0.97                                                                                | 0.95                                                                                | 0.95                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.999                                                                             |                                                                                    |                                                                                     | 0.987                                                                               |                                                                                     |                                                                                     |                                                                                     |
| Flt Protected           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.996                                                                             |                                                                                    |                                                                                     | 0.956                                                                               |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1863                                                                              | 1583                                                                              | 0                                                                                 | 0                                                                                 | 0                                                                                 | 3404                                                                              | 0                                                                                  | 0                                                                                   | 3182                                                                                | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Flt Permitted           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.802                                                                             |                                                                                    |                                                                                     | 0.952                                                                               |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 1863                                                                              | 1583                                                                              | 0                                                                                 | 0                                                                                 | 0                                                                                 | 2741                                                                              | 0                                                                                  | 0                                                                                   | 3169                                                                                | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                                |                                                                                     |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |
| Satd. Flow (RTOR)       |                                                                                   | 57                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 152                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Link Speed (mph)        | 30                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 30                                                                                |                                                                                    |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Link Distance (ft)      | 996                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 549                                                                               |                                                                                    |                                                                                     | 218                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Travel Time (s)         | 22.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 12.5                                                                              |                                                                                    |                                                                                     | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Peak Hour Factor        | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                               | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.80                                                                                |
| Adj. Flow (vph)         | 562                                                                               | 572                                                                               | 3                                                                                 | 26                                                                                | 9                                                                                 | 445                                                                               | 2                                                                                  | 2                                                                                   | 526                                                                                 | 5                                                                                   | 44                                                                                  | 9                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 562                                                                               | 575                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 482                                                                               | 0                                                                                  | 0                                                                                   | 577                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Turn Type               | NA                                                                                | pm+ov                                                                             |                                                                                   | Perm                                                                              | Perm                                                                              | NA                                                                                |                                                                                    | D.Pm                                                                                | Prot                                                                                |                                                                                     |                                                                                     | Perm                                                                                |
| Protected Phases        | 2                                                                                 | 4                                                                                 |                                                                                   |                                                                                   |                                                                                   | 2                                                                                 |                                                                                    |                                                                                     | 4                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Permitted Phases        |                                                                                   | 2                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     |                                                                                     | 5                                                                                   |
| Detector Phase          | 2                                                                                 | 4                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                    | 4                                                                                   | 4                                                                                   |                                                                                     |                                                                                     | 5                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 15.0                                                                              | 9.0                                                                               |                                                                                   | 15.0                                                                              | 15.0                                                                              | 15.0                                                                              |                                                                                    | 9.0                                                                                 | 9.0                                                                                 |                                                                                     |                                                                                     | 5.0                                                                                 |
| Minimum Split (s)       | 22.8                                                                              | 15.4                                                                              |                                                                                   | 22.8                                                                              | 22.8                                                                              | 22.8                                                                              |                                                                                    | 15.4                                                                                | 15.4                                                                                |                                                                                     |                                                                                     | 12.6                                                                                |
| Total Split (s)         | 35.8                                                                              | 33.4                                                                              |                                                                                   | 35.8                                                                              | 35.8                                                                              | 35.8                                                                              |                                                                                    | 33.4                                                                                | 33.4                                                                                |                                                                                     |                                                                                     | 19.6                                                                                |
| Total Split (%)         | 40.3%                                                                             | 37.6%                                                                             |                                                                                   | 40.3%                                                                             | 40.3%                                                                             | 40.3%                                                                             |                                                                                    | 37.6%                                                                               | 37.6%                                                                               |                                                                                     |                                                                                     | 22.1%                                                                               |
| Yellow Time (s)         | 4.1                                                                               | 3.3                                                                               |                                                                                   | 4.1                                                                               | 4.1                                                                               | 4.1                                                                               |                                                                                    | 3.3                                                                                 | 3.3                                                                                 |                                                                                     |                                                                                     | 3.3                                                                                 |
| All-Red Time (s)        | 3.7                                                                               | 3.1                                                                               |                                                                                   | 3.7                                                                               | 3.7                                                                               | 3.7                                                                               |                                                                                    | 3.1                                                                                 | 3.1                                                                                 |                                                                                     |                                                                                     | 4.3                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                    |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Total Lost Time (s)     | 7.8                                                                               | 6.4                                                                               |                                                                                   |                                                                                   |                                                                                   | 7.8                                                                               |                                                                                    |                                                                                     | 6.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | Min                                                                               | None                                                                              |                                                                                   | Min                                                                               | Min                                                                               | Min                                                                               |                                                                                    | None                                                                                | None                                                                                |                                                                                     |                                                                                     | None                                                                                |
| Act Effct Green (s)     | 22.6                                                                              | 48.9                                                                              |                                                                                   |                                                                                   |                                                                                   | 22.6                                                                              |                                                                                    |                                                                                     | 12.8                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Actuated g/C Ratio      | 0.41                                                                              | 0.89                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.41                                                                              |                                                                                    |                                                                                     | 0.23                                                                                |                                                                                     |                                                                                     |                                                                                     |
| v/c Ratio               | 0.73                                                                              | 0.41                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.43                                                                              |                                                                                    |                                                                                     | 0.67                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Control Delay           | 23.0                                                                              | 3.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 14.7                                                                              |                                                                                    |                                                                                     | 19.6                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                    |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Total Delay             | 23.0                                                                              | 3.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 14.7                                                                              |                                                                                    |                                                                                     | 19.6                                                                                |                                                                                     |                                                                                     |                                                                                     |
| LOS                     | C                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                    |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay          | 13.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 14.7                                                                              |                                                                                    |                                                                                     | 19.6                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS            | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                    |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Queue Length 50th (ft)  | 106                                                                               | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 40                                                                                |                                                                                    |                                                                                     | 52                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Queue Length 95th (ft)  | #403                                                                              | 130                                                                               |                                                                                   |                                                                                   |                                                                                   | 124                                                                               |                                                                                    |                                                                                     | 140                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Internal Link Dist (ft) | 916                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 469                                                                               |                                                                                    |                                                                                     | 138                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)

## Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | NET                                                                               | NER                                                                               | NER2                                                                              | SWL                                                                               | SWT                                                                               | SWR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |                                                                                   |  |                                                                                   |
| Traffic Volume (vph)    | 0                                                                                 | 1                                                                                 | 3                                                                                 | 2                                                                                 | 0                                                                                 | 3                                                                                 |
| Future Volume (vph)     | 0                                                                                 | 1                                                                                 | 3                                                                                 | 2                                                                                 | 0                                                                                 | 3                                                                                 |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 12                                                                                | 12                                                                                | 12                                                                                | 15                                                                                | 12                                                                                | 12                                                                                |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.952                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.923                                                                             |                                                                                   |
| Flt Protected           | 0.969                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.979                                                                             |                                                                                   |
| Satd. Flow (prot)       | 1718                                                                              | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1683                                                                              | 0                                                                                 |
| Flt Permitted           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1773                                                                              | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1719                                                                              | 0                                                                                 |
| Right Turn on Red       |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |
| Satd. Flow (RTOR)       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |
| Link Distance (ft)      | 653                                                                               |                                                                                   |                                                                                   |                                                                                   | 695                                                                               |                                                                                   |
| Travel Time (s)         | 17.8                                                                              |                                                                                   |                                                                                   |                                                                                   | 19.0                                                                              |                                                                                   |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              |
| Adj. Flow (vph)         | 0                                                                                 | 1                                                                                 | 4                                                                                 | 3                                                                                 | 0                                                                                 | 4                                                                                 |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 14                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 |
| Turn Type               | NA                                                                                |                                                                                   |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   |
| Protected Phases        | 5                                                                                 |                                                                                   |                                                                                   |                                                                                   | 5                                                                                 |                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   |
| Detector Phase          | 5                                                                                 |                                                                                   |                                                                                   | 5                                                                                 | 5                                                                                 |                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)     | 5.0                                                                               |                                                                                   |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   |
| Minimum Split (s)       | 12.6                                                                              |                                                                                   |                                                                                   | 12.6                                                                              | 12.6                                                                              |                                                                                   |
| Total Split (s)         | 19.6                                                                              |                                                                                   |                                                                                   | 19.6                                                                              | 19.6                                                                              |                                                                                   |
| Total Split (%)         | 22.1%                                                                             |                                                                                   |                                                                                   | 22.1%                                                                             | 22.1%                                                                             |                                                                                   |
| Yellow Time (s)         | 3.3                                                                               |                                                                                   |                                                                                   | 3.3                                                                               | 3.3                                                                               |                                                                                   |
| All-Red Time (s)        | 4.3                                                                               |                                                                                   |                                                                                   | 4.3                                                                               | 4.3                                                                               |                                                                                   |
| Lost Time Adjust (s)    | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |
| Total Lost Time (s)     | 7.6                                                                               |                                                                                   |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Recall Mode             | None                                                                              |                                                                                   |                                                                                   | None                                                                              | None                                                                              |                                                                                   |
| Act Effect Green (s)    | 5.6                                                                               |                                                                                   |                                                                                   |                                                                                   | 5.6                                                                               |                                                                                   |
| Actuated g/C Ratio      | 0.10                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.10                                                                              |                                                                                   |
| v/c Ratio               | 0.08                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.04                                                                              |                                                                                   |
| Control Delay           | 30.8                                                                              |                                                                                   |                                                                                   |                                                                                   | 30.5                                                                              |                                                                                   |
| Queue Delay             | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |
| Total Delay             | 30.8                                                                              |                                                                                   |                                                                                   |                                                                                   | 30.5                                                                              |                                                                                   |
| LOS                     | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |
| Approach Delay          | 30.8                                                                              |                                                                                   |                                                                                   |                                                                                   | 30.5                                                                              |                                                                                   |
| Approach LOS            | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |
| Queue Length 50th (ft)  | 4                                                                                 |                                                                                   |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |
| Queue Length 95th (ft)  | 20                                                                                |                                                                                   |                                                                                   |                                                                                   | 13                                                                                |                                                                                   |
| Internal Link Dist (ft) | 573                                                                               |                                                                                   |                                                                                   |                                                                                   | 615                                                                               |                                                                                   |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

# 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)

Timing Plan: Weekday PM Peak

|                        | →    | ↗    | ↘    | ↖    | ←   | ↗    | ↘   | ↖    | ←    | ↗   | ↘    | ↖   |
|------------------------|------|------|------|------|-----|------|-----|------|------|-----|------|-----|
| Lane Group             | EBT  | EBR  | EBR2 | WBL2 | WBL | WBT  | WBR | NWL2 | NWL  | NWR | NWR2 | NEL |
| Base Capacity (vph)    | 1028 | 1494 |      |      |     | 1513 |     |      | 1758 |     |      |     |
| Starvation Cap Reductn | 0    | 0    |      |      |     | 0    |     |      | 0    |     |      |     |
| Spillback Cap Reductn  | 0    | 0    |      |      |     | 0    |     |      | 0    |     |      |     |
| Storage Cap Reductn    | 0    | 0    |      |      |     | 0    |     |      | 0    |     |      |     |
| Reduced v/c Ratio      | 0.55 | 0.38 |      |      |     | 0.32 |     |      | 0.33 |     |      |     |

## Intersection Summary

Area Type: Other

Cycle Length: 88.8

Actuated Cycle Length: 54.8

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 15.2

Intersection LOS: B

Intersection Capacity Utilization 71.0%

ICU Level of Service C

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)/Route 58 (Tunxis Hill Cut

|                                                                                      |                                                                                      |                                                                                        |
|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
|  02 |  04 |  05 |
| 35.8 s                                                                               | 33.4 s                                                                               | 19.6 s                                                                                 |

109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike)

2049 Black Rock Turnpike

2049 Black Rock Turnpike

Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                        |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group             | NET                                                                               | NER                                                                               | NER2                                                                              | SWL                                                                               | SWT                                                                               | SWR                                                                               |
| Base Capacity (vph)    | 419                                                                               |                                                                                   |                                                                                   |                                                                                   | 406                                                                               |                                                                                   |
| Starvation Cap Reductn | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |
| Storage Cap Reductn    | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |
| Reduced v/c Ratio      | 0.03                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.02                                                                              |                                                                                   |
| Intersection Summary   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |



201: Tunxis Hill Road & Route 58 (Tunxis Hill Cutoff)  
Lanes, Volumes, Timings

2040 Background Conditions  
Timing Plan: Weekday PM Peak

|                         |                                                                                    |  |  |                                                                                    |                                                                                    |                                                                                    |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Lane Group              | EBT                                                                                                                                                                 | EBR                                                                               | WBL                                                                               | WBT                                                                                                                                                                 | NBL                                                                                                                                                                 | NBR                                                                                                                                                                 |
| Lane Configurations     |   |                                                                                   |                                                                                   |   |   |   |
| Traffic Volume (vph)    | 630                                                                                                                                                                 | 6                                                                                 | 49                                                                                | 414                                                                                                                                                                 | 0                                                                                                                                                                   | 84                                                                                                                                                                  |
| Future Volume (vph)     | 630                                                                                                                                                                 | 6                                                                                 | 49                                                                                | 414                                                                                                                                                                 | 0                                                                                                                                                                   | 84                                                                                                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                                                                                                                | 1900                                                                              | 1900                                                                              | 1900                                                                                                                                                                | 1900                                                                                                                                                                | 1900                                                                                                                                                                |
| Lane Width (ft)         | 11                                                                                                                                                                  | 12                                                                                | 12                                                                                | 11                                                                                                                                                                  | 10                                                                                                                                                                  | 10                                                                                                                                                                  |
| Storage Length (ft)     |                                                                                                                                                                     | 0                                                                                 | 0                                                                                 |                                                                                                                                                                     | 0                                                                                                                                                                   | 50                                                                                                                                                                  |
| Storage Lanes           |                                                                                                                                                                     | 0                                                                                 | 0                                                                                 |                                                                                                                                                                     | 1                                                                                                                                                                   | 1                                                                                                                                                                   |
| Taper Length (ft)       |                                                                                                                                                                     |                                                                                   | 25                                                                                |                                                                                                                                                                     | 25                                                                                                                                                                  |                                                                                                                                                                     |
| Lane Util. Factor       | 0.95                                                                                                                                                                | 0.95                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                                                                                                                | 1.00                                                                                                                                                                |
| Frt                     | 0.999                                                                                                                                                               |                                                                                   |                                                                                   |                                                                                                                                                                     |                                                                                                                                                                     | 0.850                                                                                                                                                               |
| Flt Protected           |                                                                                                                                                                     |                                                                                   |                                                                                   | 0.995                                                                                                                                                               |                                                                                                                                                                     |                                                                                                                                                                     |
| Satd. Flow (prot)       | 3418                                                                                                                                                                | 0                                                                                 | 0                                                                                 | 1792                                                                                                                                                                | 1739                                                                                                                                                                | 1478                                                                                                                                                                |
| Flt Permitted           |                                                                                                                                                                     |                                                                                   |                                                                                   | 0.995                                                                                                                                                               |                                                                                                                                                                     |                                                                                                                                                                     |
| Satd. Flow (perm)       | 3418                                                                                                                                                                | 0                                                                                 | 0                                                                                 | 1792                                                                                                                                                                | 1739                                                                                                                                                                | 1478                                                                                                                                                                |
| Link Speed (mph)        | 30                                                                                                                                                                  |                                                                                   |                                                                                   | 30                                                                                                                                                                  | 25                                                                                                                                                                  |                                                                                                                                                                     |
| Link Distance (ft)      | 1095                                                                                                                                                                |                                                                                   |                                                                                   | 214                                                                                                                                                                 | 782                                                                                                                                                                 |                                                                                                                                                                     |
| Travel Time (s)         | 24.9                                                                                                                                                                |                                                                                   |                                                                                   | 4.9                                                                                                                                                                 | 21.3                                                                                                                                                                |                                                                                                                                                                     |
| Peak Hour Factor        | 0.95                                                                                                                                                                | 0.95                                                                              | 0.90                                                                              | 0.90                                                                                                                                                                | 0.83                                                                                                                                                                | 0.83                                                                                                                                                                |
| Adj. Flow (vph)         | 663                                                                                                                                                                 | 6                                                                                 | 54                                                                                | 460                                                                                                                                                                 | 0                                                                                                                                                                   | 101                                                                                                                                                                 |
| Shared Lane Traffic (%) |                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                                                                                                     |
| Lane Group Flow (vph)   | 669                                                                                                                                                                 | 0                                                                                 | 0                                                                                 | 514                                                                                                                                                                 | 0                                                                                                                                                                   | 101                                                                                                                                                                 |
| Sign Control            | Free                                                                                                                                                                |                                                                                   |                                                                                   | Free                                                                                                                                                                | Stop                                                                                                                                                                |                                                                                                                                                                     |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 48.8% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1.3

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↑↑   |      |      | ↑    | ↑    | ↑    |
| Traffic Vol, veh/h       | 630  | 6    | 49   | 414  | 0    | 84   |
| Future Vol, veh/h        | 630  | 6    | 49   | 414  | 0    | 84   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | 0    | 50   |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 95   | 95   | 90   | 90   | 83   | 83   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 663  | 6    | 54   | 460  | 0    | 101  |

| Major/Minor          | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0      | 0      | 669    |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Critical Hdwy        | -      | -      | 4.13   |
| Critical Hdwy Stg 1  | -      | -      | -      |
| Critical Hdwy Stg 2  | -      | -      | -      |
| Follow-up Hdwy       | -      | -      | 2.219  |
| Pot Cap-1 Maneuver   | -      | -      | 919    |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | -      | -      | 919    |
| Mov Cap-2 Maneuver   | -      | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |

| Approach             | EB | WB | NB   |
|----------------------|----|----|------|
| HCM Control Delay, s | 0  | 1  | 11.4 |
| HCM LOS              |    |    | B    |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | -     | 662   | -   | -   | 919   | -   |
| HCM Lane V/C Ratio    | -     | 0.153 | -   | -   | 0.059 | -   |
| HCM Control Delay (s) | 0     | 11.4  | -   | -   | 9.2   | 0   |
| HCM Lane LOS          | A     | B     | -   | -   | A     | A   |
| HCM 95th %tile Q(veh) | -     | 0.5   | -   | -   | 0.2   | -   |

202: Route 732 (Black Rock Turnpike) & Judd Street  
Lanes, Volumes, Timings

2040 Background Conditions  
Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (vph)    | 34                                                                                | 96                                                                                | 53                                                                                | 492                                                                               | 562                                                                               | 20                                                                                |
| Future Volume (vph)     | 34                                                                                | 96                                                                                | 53                                                                                | 492                                                                               | 562                                                                               | 20                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Storage Length (ft)     | 0                                                                                 | 0                                                                                 | 25                                                                                |                                                                                   |                                                                                   | 0                                                                                 |
| Storage Lanes           | 1                                                                                 | 0                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 25                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.900                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |
| Flt Protected           | 0.987                                                                             |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1875                                                                              | 0                                                                                 | 0                                                                                 | 3522                                                                              | 1853                                                                              | 0                                                                                 |
| Flt Permitted           | 0.987                                                                             |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1875                                                                              | 0                                                                                 | 0                                                                                 | 3522                                                                              | 1853                                                                              | 0                                                                                 |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 586                                                                               |                                                                                   |                                                                                   | 395                                                                               | 218                                                                               |                                                                                   |
| Travel Time (s)         | 16.0                                                                              |                                                                                   |                                                                                   | 9.0                                                                               | 5.0                                                                               |                                                                                   |
| Peak Hour Factor        | 0.83                                                                              | 0.83                                                                              | 0.91                                                                              | 0.91                                                                              | 0.95                                                                              | 0.95                                                                              |
| Adj. Flow (vph)         | 41                                                                                | 116                                                                               | 58                                                                                | 541                                                                               | 592                                                                               | 21                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 157                                                                               | 0                                                                                 | 0                                                                                 | 599                                                                               | 613                                                                               | 0                                                                                 |
| Sign Control            | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 63.7% ICU Level of Service B

Analysis Period (min) 15

Intersection

Int Delay, s/veh 2.8

| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↔    |      |      | ↕    | ↕    |      |
| Traffic Vol, veh/h       | 34   | 96   | 53   | 492  | 562  | 20   |
| Future Vol, veh/h        | 34   | 96   | 53   | 492  | 562  | 20   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 0    | -    | 25   | -    | -    | -    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 83   | 83   | 91   | 91   | 95   | 95   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 41   | 116  | 58   | 541  | 592  | 21   |

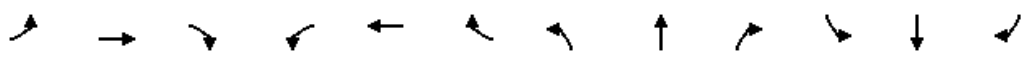
| Major/Minor          | Minor2 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 989    | 602    | 613    |
| Stage 1              | 602    | -      | -      |
| Stage 2              | 387    | -      | -      |
| Critical Hdwy        | 6.63   | 6.23   | 4.13   |
| Critical Hdwy Stg 1  | 5.43   | -      | -      |
| Critical Hdwy Stg 2  | 5.83   | -      | -      |
| Follow-up Hdwy       | 3.519  | 3.319  | 2.219  |
| Pot Cap-1 Maneuver   | 258    | 499    | 964    |
| Stage 1              | 546    | -      | -      |
| Stage 2              | 657    | -      | -      |
| Platoon blocked, %   |        |        |        |
| Mov Cap-1 Maneuver   | 236    | 499    | 964    |
| Mov Cap-2 Maneuver   | 236    | -      | -      |
| Stage 1              | 546    | -      | -      |
| Stage 2              | 600    | -      | -      |

| Approach             | EB   | NB  | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 20.6 | 1.1 | 0  |
| HCM LOS              | C    |     |    |

| Minor Lane/Major Mvmt | NBL  | NBT | EBLn1 | SBT | SBR |
|-----------------------|------|-----|-------|-----|-----|
| Capacity (veh/h)      | 964  | -   | 386   | -   | -   |
| HCM Lane V/C Ratio    | 0.06 | -   | 0.406 | -   | -   |
| HCM Control Delay (s) | 9    | 0.3 | 20.6  | -   | -   |
| HCM Lane LOS          | A    | A   | C     | -   | -   |
| HCM 95th %tile Q(veh) | 0.2  | -   | 1.9   | -   | -   |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/2040 Background Conditions Lanes, Volumes, Timings

Timing Plan: Saturday Midday

|                         |  |       |      |       |       |      |       |       |      |       |       |      |
|-------------------------|------------------------------------------------------------------------------------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|
| Lane Group              | EBL                                                                                | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
| Lane Configurations     |                                                                                    | ↔     |      |       | ↔     |      |       | ↔     |      |       | ↔     |      |
| Traffic Volume (vph)    | 6                                                                                  | 1     | 2    | 75    | 1     | 111  | 2     | 820   | 77   | 71    | 895   | 8    |
| Future Volume (vph)     | 6                                                                                  | 1     | 2    | 75    | 1     | 111  | 2     | 820   | 77   | 71    | 895   | 8    |
| Ideal Flow (vphpl)      | 1900                                                                               | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12                                                                                 | 16    | 12   | 12    | 16    | 12   | 12    | 13    | 12   | 12    | 13    | 12   |
| Lane Util. Factor       | 1.00                                                                               | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 |
| Frt                     |                                                                                    | 0.966 |      |       | 0.920 |      |       | 0.988 |      |       | 0.999 |      |
| Flt Protected           |                                                                                    | 0.968 |      |       | 0.980 |      |       |       |      |       | 0.996 |      |
| Satd. Flow (prot)       | 0                                                                                  | 1974  | 0    | 0     | 1903  | 0    | 0     | 1902  | 0    | 0     | 1915  | 0    |
| Flt Permitted           |                                                                                    | 0.783 |      |       | 0.864 |      |       | 0.999 |      |       | 0.877 |      |
| Satd. Flow (perm)       | 0                                                                                  | 1597  | 0    | 0     | 1678  | 0    | 0     | 1900  | 0    | 0     | 1686  | 0    |
| Right Turn on Red       |                                                                                    |       | Yes  |       |       | Yes  |       |       | Yes  |       |       | Yes  |
| Satd. Flow (RTOR)       |                                                                                    | 3     |      |       | 99    |      |       | 14    |      |       | 1     |      |
| Link Speed (mph)        |                                                                                    | 25    |      |       | 30    |      |       | 35    |      |       | 35    |      |
| Link Distance (ft)      |                                                                                    | 378   |      |       | 442   |      |       | 1898  |      |       | 522   |      |
| Travel Time (s)         |                                                                                    | 10.3  |      |       | 10.0  |      |       | 37.0  |      |       | 10.2  |      |
| Peak Hour Factor        | 0.80                                                                               | 0.80  | 0.80 | 0.80  | 0.80  | 0.80 | 0.94  | 0.94  | 0.94 | 0.94  | 0.94  | 0.94 |
| Adj. Flow (vph)         | 8                                                                                  | 1     | 3    | 94    | 1     | 139  | 2     | 872   | 82   | 76    | 952   | 9    |
| Shared Lane Traffic (%) |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 0                                                                                  | 12    | 0    | 0     | 234   | 0    | 0     | 956   | 0    | 0     | 1037  | 0    |
| Turn Type               | Perm                                                                               | NA    |      | Perm  | NA    |      | Perm  | NA    |      | Perm  | NA    |      |
| Protected Phases        |                                                                                    | 4     |      |       | 8     |      |       | 2     |      |       | 6     |      |
| Permitted Phases        | 4                                                                                  |       |      | 8     |       |      | 2     |       |      | 6     |       |      |
| Detector Phase          | 4                                                                                  | 4     |      | 8     | 8     |      | 2     | 2     |      | 6     | 6     |      |
| Switch Phase            |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Minimum Initial (s)     | 7.0                                                                                | 7.0   |      | 7.0   | 7.0   |      | 15.0  | 15.0  |      | 15.0  | 15.0  |      |
| Minimum Split (s)       | 11.7                                                                               | 11.7  |      | 11.7  | 11.7  |      | 20.6  | 20.6  |      | 20.6  | 20.6  |      |
| Total Split (s)         | 17.7                                                                               | 17.7  |      | 17.7  | 17.7  |      | 48.6  | 48.6  |      | 48.6  | 48.6  |      |
| Total Split (%)         | 26.7%                                                                              | 26.7% |      | 26.7% | 26.7% |      | 73.3% | 73.3% |      | 73.3% | 73.3% |      |
| Yellow Time (s)         | 3.3                                                                                | 3.3   |      | 3.3   | 3.3   |      | 4.0   | 4.0   |      | 4.0   | 4.0   |      |
| All-Red Time (s)        | 1.4                                                                                | 1.4   |      | 1.4   | 1.4   |      | 1.6   | 1.6   |      | 1.6   | 1.6   |      |
| Lost Time Adjust (s)    |                                                                                    | 0.0   |      |       | 0.0   |      |       | 0.0   |      |       | 0.0   |      |
| Total Lost Time (s)     |                                                                                    | 4.7   |      |       | 4.7   |      |       | 5.6   |      |       | 5.6   |      |
| Lead/Lag                |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Lead-Lag Optimize?      |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Recall Mode             | None                                                                               | None  |      | None  | None  |      | Min   | Min   |      | Min   | Min   |      |
| Act Effect Green (s)    |                                                                                    | 9.9   |      |       | 9.9   |      |       | 41.9  |      |       | 41.9  |      |
| Actuated g/C Ratio      |                                                                                    | 0.16  |      |       | 0.16  |      |       | 0.67  |      |       | 0.67  |      |
| v/c Ratio               |                                                                                    | 0.05  |      |       | 0.67  |      |       | 0.74  |      |       | 0.91  |      |
| Control Delay           |                                                                                    | 19.9  |      |       | 24.7  |      |       | 11.7  |      |       | 24.3  |      |
| Queue Delay             |                                                                                    | 0.0   |      |       | 0.0   |      |       | 0.0   |      |       | 0.0   |      |
| Total Delay             |                                                                                    | 19.9  |      |       | 24.7  |      |       | 11.7  |      |       | 24.3  |      |
| LOS                     |                                                                                    | B     |      |       | C     |      |       | B     |      |       | C     |      |
| Approach Delay          |                                                                                    | 19.9  |      |       | 24.7  |      |       | 11.7  |      |       | 24.3  |      |
| Approach LOS            |                                                                                    | B     |      |       | C     |      |       | B     |      |       | C     |      |
| Queue Length 50th (ft)  |                                                                                    | 3     |      |       | 48    |      |       | 186   |      |       | 266   |      |
| Queue Length 95th (ft)  |                                                                                    | 14    |      |       | 92    |      |       | 384   |      |       | #643  |      |
| Internal Link Dist (ft) |                                                                                    | 298   |      |       | 362   |      |       | 1818  |      |       | 442   |      |
| Turn Bay Length (ft)    |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |



# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive Background Conditions Lanes, Volumes, Timings

Timing Plan: Saturday Midday

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Base Capacity (vph)    |                                                                                   | 338                                                                               |                                                                                   |                                                                                   | 431                                                                               |                                                                                   |                                                                                    | 1326                                                                                |                                                                                     |                                                                                     | 1173                                                                                |                                                                                     |
| Starvation Cap Reductn |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   | 0.04                                                                              |                                                                                   |                                                                                   | 0.54                                                                              |                                                                                   |                                                                                    | 0.72                                                                                |                                                                                     |                                                                                     | 0.88                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 66.3

Actuated Cycle Length: 62.1

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 18.9

Intersection LOS: B

Intersection Capacity Utilization 122.8%

ICU Level of Service H

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

|                                                                                       |                                                                                         |
|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|  Ø2  |  Ø4  |
| 48.6 s                                                                                | 17.7 s                                                                                  |
|  Ø6 |  Ø8 |
| 48.6 s                                                                                | 17.7 s                                                                                  |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

## Lanes, Volumes, Timings

2040 Background Conditions

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |    |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3 |
| Lane Configurations     |  |  |  |  |  |  |    |
| Traffic Volume (vph)    | 120                                                                               | 207                                                                               | 144                                                                               | 803                                                                               | 810                                                                               | 77                                                                                |    |
| Future Volume (vph)     | 120                                                                               | 207                                                                               | 144                                                                               | 803                                                                               | 810                                                                               | 77                                                                                |    |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |    |
| Lane Width (ft)         | 10                                                                                | 10                                                                                | 11                                                                                | 11                                                                                | 12                                                                                | 12                                                                                |    |
| Storage Length (ft)     | 0                                                                                 | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   | 0                                                                                 |    |
| Storage Lanes           | 1                                                                                 | 1                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |    |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |    |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              |    |
| Frt                     |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.987                                                                             |                                                                                   |    |
| Flt Protected           | 0.950                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |    |
| Satd. Flow (prot)       | 1652                                                                              | 1478                                                                              | 1711                                                                              | 1801                                                                              | 3493                                                                              | 0                                                                                 |    |
| Flt Permitted           | 0.950                                                                             |                                                                                   | 0.221                                                                             |                                                                                   |                                                                                   |                                                                                   |    |
| Satd. Flow (perm)       | 1652                                                                              | 1478                                                                              | 398                                                                               | 1801                                                                              | 3493                                                                              | 0                                                                                 |    |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |    |
| Satd. Flow (RTOR)       |                                                                                   | 252                                                                               |                                                                                   |                                                                                   | 12                                                                                |                                                                                   |    |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 35                                                                                |                                                                                   |    |
| Link Distance (ft)      | 445                                                                               |                                                                                   |                                                                                   | 510                                                                               | 341                                                                               |                                                                                   |    |
| Travel Time (s)         | 12.1                                                                              |                                                                                   |                                                                                   | 11.6                                                                              | 6.6                                                                               |                                                                                   |    |
| Peak Hour Factor        | 0.82                                                                              | 0.82                                                                              | 0.98                                                                              | 0.98                                                                              | 0.90                                                                              | 0.90                                                                              |    |
| Adj. Flow (vph)         | 146                                                                               | 252                                                                               | 147                                                                               | 819                                                                               | 900                                                                               | 86                                                                                |    |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |    |
| Lane Group Flow (vph)   | 146                                                                               | 252                                                                               | 147                                                                               | 819                                                                               | 986                                                                               | 0                                                                                 |    |
| Turn Type               | Prot                                                                              | Perm                                                                              | pm+pt                                                                             | NA                                                                                | NA                                                                                |                                                                                   |    |
| Protected Phases        | 4                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 | 2                                                                                 | 3                                                                                 |    |
| Permitted Phases        |                                                                                   | 4                                                                                 | 6                                                                                 |                                                                                   |                                                                                   |                                                                                   |    |
| Detector Phase          | 4                                                                                 | 4                                                                                 | 1                                                                                 | 6                                                                                 | 2                                                                                 |                                                                                   |    |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |    |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               | 5.0                                                                               | 15.0                                                                              | 15.0                                                                              | 7.0                                                                               |    |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              | 9.2                                                                               | 21.9                                                                              | 21.9                                                                              | 22.0                                                                              |    |
| Total Split (s)         | 21.9                                                                              | 21.9                                                                              | 9.2                                                                               | 31.1                                                                              | 21.9                                                                              | 22.0                                                                              |    |
| Total Split (%)         | 29.2%                                                                             | 29.2%                                                                             | 12.3%                                                                             | 41.5%                                                                             | 29.2%                                                                             | 29%                                                                               |    |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               | 3.2                                                                               | 4.9                                                                               | 4.9                                                                               | 4.0                                                                               |    |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 2.0                                                                               | 2.0                                                                               | 0.0                                                                               |    |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |    |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               | 4.2                                                                               | 6.9                                                                               | 6.9                                                                               |                                                                                   |    |
| Lead/Lag                | Lag                                                                               | Lag                                                                               | Lead                                                                              |                                                                                   | Lag                                                                               | Lead                                                                              |    |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |    |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                             | C-Max                                                                             | None                                                                              |    |
| Act Effct Green (s)     | 11.6                                                                              | 11.6                                                                              | 55.2                                                                              | 52.5                                                                              | 41.3                                                                              |                                                                                   |    |
| Actuated g/C Ratio      | 0.15                                                                              | 0.15                                                                              | 0.74                                                                              | 0.70                                                                              | 0.55                                                                              |                                                                                   |    |
| v/c Ratio               | 0.57                                                                              | 0.57                                                                              | 0.35                                                                              | 0.65                                                                              | 0.51                                                                              |                                                                                   |    |
| Control Delay           | 38.0                                                                              | 9.5                                                                               | 8.3                                                                               | 17.7                                                                              | 12.4                                                                              |                                                                                   |    |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |    |
| Total Delay             | 38.0                                                                              | 9.5                                                                               | 8.3                                                                               | 17.7                                                                              | 12.4                                                                              |                                                                                   |    |
| LOS                     | D                                                                                 | A                                                                                 | A                                                                                 | B                                                                                 | B                                                                                 |                                                                                   |    |
| Approach Delay          | 19.9                                                                              |                                                                                   |                                                                                   | 16.2                                                                              | 12.4                                                                              |                                                                                   |    |
| Approach LOS            | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 | B                                                                                 |                                                                                   |    |
| Queue Length 50th (ft)  | 64                                                                                | 0                                                                                 | 27                                                                                | 332                                                                               | 133                                                                               |                                                                                   |    |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive Lanes, Volumes, Timings

2040 Background Conditions  
Timing Plan: Saturday Midday

|                         |  |  |  |  |  |  |    |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3 |
| Queue Length 95th (ft)  | 100                                                                               | 41                                                                                | 60                                                                                | 488                                                                               | 230                                                                               |                                                                                   |    |
| Internal Link Dist (ft) | 365                                                                               |                                                                                   |                                                                                   | 430                                                                               | 261                                                                               |                                                                                   |    |
| Turn Bay Length (ft)    |                                                                                   | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   |                                                                                   |    |
| Base Capacity (vph)     | 394                                                                               | 544                                                                               | 415                                                                               | 1260                                                                              | 1929                                                                              |                                                                                   |    |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Reduced v/c Ratio       | 0.37                                                                              | 0.46                                                                              | 0.35                                                                              | 0.65                                                                              | 0.51                                                                              |                                                                                   |    |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 22 (29%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 15.2

Intersection LOS: B

Intersection Capacity Utilization 58.8%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

|                                                                                            |                                                                                           |                                                                                       |                                                                                         |
|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|  Ø1      |  Ø2 (R) |  Ø3 |  Ø4 |
| 9.2 s                                                                                      | 21.9 s                                                                                    | 22 s                                                                                  | 21.9 s                                                                                  |
|  Ø6 (R) |                                                                                           |                                                                                       |                                                                                         |
| 31.1 s                                                                                     |                                                                                           |                                                                                       |                                                                                         |

# 103: Route 58 (Black Rock Turnpike) & Brookside Drive

## Lanes, Volumes, Timings

2040 Background Conditions

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (vph)    | 89                                                                                | 59                                                                                | 54                                                                                | 900                                                                               | 952                                                                               | 108                                                                               |
| Future Volume (vph)     | 89                                                                                | 59                                                                                | 54                                                                                | 900                                                                               | 952                                                                               | 108                                                                               |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              |
| Frt                     | 0.946                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.985                                                                             |                                                                                   |
| Flt Protected           | 0.971                                                                             |                                                                                   |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1939                                                                              | 0                                                                                 | 0                                                                                 | 3529                                                                              | 3486                                                                              | 0                                                                                 |
| Flt Permitted           | 0.971                                                                             |                                                                                   |                                                                                   | 0.827                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1939                                                                              | 0                                                                                 | 0                                                                                 | 2927                                                                              | 3486                                                                              | 0                                                                                 |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |
| Satd. Flow (RTOR)       | 44                                                                                |                                                                                   |                                                                                   |                                                                                   | 20                                                                                |                                                                                   |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 347                                                                               |                                                                                   |                                                                                   | 293                                                                               | 336                                                                               |                                                                                   |
| Travel Time (s)         | 9.5                                                                               |                                                                                   |                                                                                   | 6.7                                                                               | 7.6                                                                               |                                                                                   |
| Peak Hour Factor        | 0.83                                                                              | 0.83                                                                              | 0.98                                                                              | 0.98                                                                              | 0.96                                                                              | 0.96                                                                              |
| Adj. Flow (vph)         | 107                                                                               | 71                                                                                | 55                                                                                | 918                                                                               | 992                                                                               | 113                                                                               |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 178                                                                               | 0                                                                                 | 0                                                                                 | 973                                                                               | 1105                                                                              | 0                                                                                 |
| Turn Type               | Prot                                                                              |                                                                                   | pm+pt                                                                             | NA                                                                                | NA                                                                                |                                                                                   |
| Protected Phases        | 4                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                 | 6                                                                                 |                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Detector Phase          | 4                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                 | 6                                                                                 |                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)     | 9.0                                                                               |                                                                                   | 3.0                                                                               | 15.0                                                                              | 15.0                                                                              |                                                                                   |
| Minimum Split (s)       | 13.0                                                                              |                                                                                   | 8.9                                                                               | 20.4                                                                              | 20.4                                                                              |                                                                                   |
| Total Split (s)         | 25.0                                                                              |                                                                                   | 14.0                                                                              | 50.0                                                                              | 36.0                                                                              |                                                                                   |
| Total Split (%)         | 33.3%                                                                             |                                                                                   | 18.7%                                                                             | 66.7%                                                                             | 48.0%                                                                             |                                                                                   |
| Yellow Time (s)         | 3.0                                                                               |                                                                                   | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               |                                                                                   |
| All-Red Time (s)        | 1.0                                                                               |                                                                                   | 1.7                                                                               | 1.2                                                                               | 1.2                                                                               |                                                                                   |
| Lost Time Adjust (s)    | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |
| Total Lost Time (s)     | 4.0                                                                               |                                                                                   |                                                                                   | 5.4                                                                               | 5.4                                                                               |                                                                                   |
| Lead/Lag                |                                                                                   |                                                                                   | Lag                                                                               |                                                                                   | Lead                                                                              |                                                                                   |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   | Yes                                                                               |                                                                                   |
| Recall Mode             | None                                                                              |                                                                                   | None                                                                              | C-Max                                                                             | C-Max                                                                             |                                                                                   |
| Act Effect Green (s)    | 10.7                                                                              |                                                                                   |                                                                                   | 54.9                                                                              | 54.9                                                                              |                                                                                   |
| Actuated g/C Ratio      | 0.14                                                                              |                                                                                   |                                                                                   | 0.73                                                                              | 0.73                                                                              |                                                                                   |
| v/c Ratio               | 0.57                                                                              |                                                                                   |                                                                                   | 0.45                                                                              | 0.43                                                                              |                                                                                   |
| Control Delay           | 29.3                                                                              |                                                                                   |                                                                                   | 3.7                                                                               | 3.3                                                                               |                                                                                   |
| Queue Delay             | 0.0                                                                               |                                                                                   |                                                                                   | 0.1                                                                               | 0.0                                                                               |                                                                                   |
| Total Delay             | 29.3                                                                              |                                                                                   |                                                                                   | 3.8                                                                               | 3.4                                                                               |                                                                                   |
| LOS                     | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |
| Approach Delay          | 29.3                                                                              |                                                                                   |                                                                                   | 3.8                                                                               | 3.4                                                                               |                                                                                   |
| Approach LOS            | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |
| Queue Length 50th (ft)  | 59                                                                                |                                                                                   |                                                                                   | 53                                                                                | 12                                                                                |                                                                                   |
| Queue Length 95th (ft)  | 99                                                                                |                                                                                   |                                                                                   | 87                                                                                | 14                                                                                |                                                                                   |
| Internal Link Dist (ft) | 267                                                                               |                                                                                   |                                                                                   | 213                                                                               | 256                                                                               |                                                                                   |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

# 103: Route 58 (Black Rock Turnpike) & Brookside Drive Lanes, Volumes, Timings

2040 Background Conditions

Timing Plan: Saturday MIDDAY

|                        |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Base Capacity (vph)    | 574                                                                               |                                                                                   |                                                                                   | 2140                                                                              | 2555                                                                              |                                                                                   |
| Starvation Cap Reductn | 0                                                                                 |                                                                                   |                                                                                   | 305                                                                               | 0                                                                                 |                                                                                   |
| Spillback Cap Reductn  | 2                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 203                                                                               |                                                                                   |
| Storage Cap Reductn    | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |
| Reduced v/c Ratio      | 0.31                                                                              |                                                                                   |                                                                                   | 0.53                                                                              | 0.47                                                                              |                                                                                   |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 45 (60%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.57

Intersection Signal Delay: 5.6

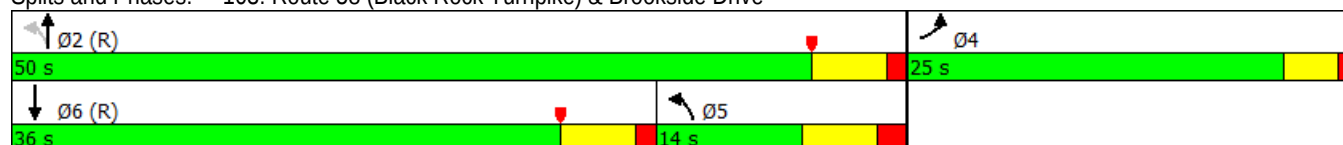
Intersection LOS: A

Intersection Capacity Utilization 77.1%

ICU Level of Service D

Analysis Period (min) 15

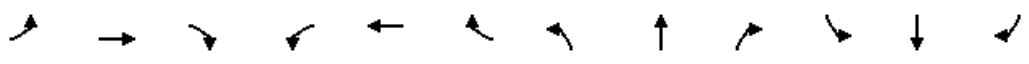
Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive





# 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairview Road Conditions Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |       |       |       |       |       |       |       |      |       |       |      |
|-------------------------|------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|------|
| Lane Group              | EBL                                                                                | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
| Lane Configurations     |                                                                                    |       |       |       |       |       |       |       |      |       |       |      |
| Traffic Volume (vph)    | 36                                                                                 | 19    | 42    | 88    | 22    | 131   | 36    | 835   | 75   | 108   | 881   | 43   |
| Future Volume (vph)     | 36                                                                                 | 19    | 42    | 88    | 22    | 131   | 36    | 835   | 75   | 108   | 881   | 43   |
| Ideal Flow (vphpl)      | 1900                                                                               | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12                                                                                 | 12    | 12    | 12    | 12    | 11    | 12    | 11    | 12   | 12    | 11    | 12   |
| Storage Length (ft)     | 0                                                                                  |       | 0     | 0     |       | 75    | 0     |       | 0    | 0     |       | 0    |
| Storage Lanes           | 0                                                                                  |       | 1     | 0     |       | 1     | 0     |       | 0    | 0     |       | 0    |
| Taper Length (ft)       | 25                                                                                 |       |       | 25    |       |       | 25    |       |      | 25    |       |      |
| Lane Util. Factor       | 1.00                                                                               | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 0.95  | 0.95  | 0.95 | 0.95  | 0.95  | 0.95 |
| Frt                     |                                                                                    |       | 0.850 |       |       | 0.850 |       | 0.988 |      |       | 0.994 |      |
| Flt Protected           |                                                                                    | 0.968 |       |       | 0.962 |       |       | 0.998 |      |       | 0.995 |      |
| Satd. Flow (prot)       | 0                                                                                  | 1803  | 1583  | 0     | 1792  | 1531  | 0     | 3373  | 0    | 0     | 3384  | 0    |
| Flt Permitted           |                                                                                    | 0.763 |       |       | 0.727 |       |       | 0.879 |      |       | 0.727 |      |
| Satd. Flow (perm)       | 0                                                                                  | 1421  | 1583  | 0     | 1354  | 1531  | 0     | 2971  | 0    | 0     | 2472  | 0    |
| Right Turn on Red       |                                                                                    |       | Yes   |       |       | No    |       |       | Yes  |       |       | Yes  |
| Satd. Flow (RTOR)       |                                                                                    |       | 128   |       |       |       |       | 14    |      |       | 10    |      |
| Link Speed (mph)        |                                                                                    | 30    |       |       | 25    |       |       | 30    |      |       | 30    |      |
| Link Distance (ft)      |                                                                                    | 87    |       |       | 499   |       |       | 713   |      |       | 293   |      |
| Travel Time (s)         |                                                                                    | 2.0   |       |       | 13.6  |       |       | 16.2  |      |       | 6.7   |      |
| Peak Hour Factor        | 0.88                                                                               | 0.88  | 0.88  | 0.80  | 0.80  | 0.80  | 0.97  | 0.97  | 0.97 | 0.96  | 0.96  | 0.96 |
| Adj. Flow (vph)         | 41                                                                                 | 22    | 48    | 110   | 28    | 164   | 37    | 861   | 77   | 113   | 918   | 45   |
| Shared Lane Traffic (%) |                                                                                    |       |       |       |       |       |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 0                                                                                  | 63    | 48    | 0     | 138   | 164   | 0     | 975   | 0    | 0     | 1076  | 0    |
| Turn Type               | Perm                                                                               | NA    | Perm  | Perm  | NA    | Perm  | Perm  | NA    |      | pm+pt | NA    |      |
| Protected Phases        |                                                                                    | 4     |       |       | 8     |       |       | 2     |      | 1     | 6     |      |
| Permitted Phases        | 4                                                                                  |       | 4     | 8     |       | 8     | 2     |       |      | 6     |       |      |
| Detector Phase          | 4                                                                                  | 4     | 4     | 8     | 8     | 8     | 2     | 2     |      | 1     | 6     |      |
| Switch Phase            |                                                                                    |       |       |       |       |       |       |       |      |       |       |      |
| Minimum Initial (s)     | 9.0                                                                                | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 15.0  | 15.0  |      | 3.0   | 15.0  |      |
| Minimum Split (s)       | 13.0                                                                               | 13.0  | 13.0  | 13.0  | 13.0  | 13.0  | 20.3  | 20.3  |      | 9.5   | 20.3  |      |
| Total Split (s)         | 25.0                                                                               | 25.0  | 25.0  | 25.0  | 25.0  | 25.0  | 36.0  | 36.0  |      | 14.0  | 50.0  |      |
| Total Split (%)         | 33.3%                                                                              | 33.3% | 33.3% | 33.3% | 33.3% | 33.3% | 48.0% | 48.0% |      | 18.7% | 66.7% |      |
| Yellow Time (s)         | 3.0                                                                                | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 4.3   | 4.3   |      | 4.3   | 4.3   |      |
| All-Red Time (s)        | 1.0                                                                                | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |      | 2.2   | 1.0   |      |
| Lost Time Adjust (s)    |                                                                                    | 0.0   | 0.0   |       | 0.0   | 0.0   |       | 0.0   |      |       | 0.0   |      |
| Total Lost Time (s)     |                                                                                    | 4.0   | 4.0   |       | 4.0   | 4.0   |       | 5.3   |      |       | 5.3   |      |
| Lead/Lag                |                                                                                    |       |       |       |       |       | Lead  | Lead  |      | Lag   |       |      |
| Lead-Lag Optimize?      |                                                                                    |       |       |       |       |       | Yes   | Yes   |      | Yes   |       |      |
| Recall Mode             | None                                                                               | None  | None  | None  | None  | None  | C-Max | C-Max |      | None  | C-Max |      |
| Act Effct Green (s)     |                                                                                    | 12.8  | 12.8  |       | 12.8  | 12.8  |       | 52.9  |      |       | 52.9  |      |
| Actuated g/C Ratio      |                                                                                    | 0.17  | 0.17  |       | 0.17  | 0.17  |       | 0.71  |      |       | 0.71  |      |
| v/c Ratio               |                                                                                    | 0.26  | 0.13  |       | 0.60  | 0.63  |       | 0.46  |      |       | 0.62  |      |
| Control Delay           |                                                                                    | 28.3  | 0.7   |       | 39.0  | 39.1  |       | 6.2   |      |       | 5.3   |      |
| Queue Delay             |                                                                                    | 0.0   | 0.0   |       | 0.0   | 0.0   |       | 0.0   |      |       | 0.0   |      |
| Total Delay             |                                                                                    | 28.3  | 0.7   |       | 39.0  | 39.1  |       | 6.2   |      |       | 5.3   |      |
| LOS                     |                                                                                    | C     | A     |       | D     | D     |       | A     |      |       | A     |      |
| Approach Delay          |                                                                                    | 16.3  |       |       | 39.1  |       |       | 6.2   |      |       | 5.3   |      |
| Approach LOS            |                                                                                    | B     |       |       | D     |       |       | A     |      |       | A     |      |
| Queue Length 50th (ft)  |                                                                                    | 26    | 0     |       | 60    | 72    |       | 81    |      |       | 20    |      |

# 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road Conditions Lanes, Volumes, Timings

Timing Plan: Saturday Midday

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 53                                                                                | 0                                                                                 |                                                                                   | 92                                                                                | 105                                                                               |                                                                                    | 153                                                                                 |                                                                                     |                                                                                     | 295                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 7                                                                                 |                                                                                   |                                                                                   | 419                                                                               |                                                                                   |                                                                                    | 633                                                                                 |                                                                                     |                                                                                     | 213                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 75                                                                                |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 397                                                                               | 535                                                                               |                                                                                   | 379                                                                               | 428                                                                               |                                                                                    | 2098                                                                                |                                                                                     |                                                                                     | 1746                                                                                |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.16                                                                              | 0.09                                                                              |                                                                                   | 0.36                                                                              | 0.38                                                                              |                                                                                    | 0.46                                                                                |                                                                                     |                                                                                     | 0.62                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 48 (64%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 10.3

Intersection LOS: B

Intersection Capacity Utilization 80.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road

|                                                                                            |                                                                                        |                                                                                         |
|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|  Ø2 (R)  |  Ø1  |  Ø4 |
| 36 s                                                                                       | 14 s                                                                                   | 25 s                                                                                    |
|  Ø6 (R) |  Ø8 |                                                                                         |
| 50 s                                                                                       | 25 s                                                                                   |                                                                                         |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Background Conditions

## Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |       |      |       |       |      |       |       |      |       |       |      |
|-------------------------|------------------------------------------------------------------------------------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|
| Lane Group              | EBL                                                                                | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
| Lane Configurations     |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Traffic Volume (vph)    | 86                                                                                 | 679   | 171  | 142   | 657   | 160  | 233   | 210   | 157  | 241   | 275   | 61   |
| Future Volume (vph)     | 86                                                                                 | 679   | 171  | 142   | 657   | 160  | 233   | 210   | 157  | 241   | 275   | 61   |
| Ideal Flow (vphpl)      | 1900                                                                               | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 11                                                                                 | 11    | 12   | 11    | 12    | 12   | 11    | 11    | 12   | 12    | 12    | 12   |
| Storage Length (ft)     | 200                                                                                |       | 0    | 175   |       | 0    | 210   |       | 0    | 170   |       | 0    |
| Storage Lanes           | 1                                                                                  |       | 0    | 1     |       | 0    | 1     |       | 0    | 1     |       | 0    |
| Taper Length (ft)       | 85                                                                                 |       |      | 75    |       |      | 100   |       |      | 100   |       |      |
| Lane Util. Factor       | 1.00                                                                               | 0.95  | 0.95 | 1.00  | 0.95  | 0.95 | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 |
| Frt                     |                                                                                    | 0.970 |      |       | 0.971 |      |       | 0.936 |      |       | 0.973 |      |
| Flt Protected           | 0.950                                                                              |       |      | 0.950 |       |      | 0.950 |       |      | 0.950 |       |      |
| Satd. Flow (prot)       | 1711                                                                               | 3319  | 0    | 1711  | 3437  | 0    | 1711  | 1685  | 0    | 1770  | 1812  | 0    |
| Flt Permitted           | 0.950                                                                              |       |      | 0.950 |       |      | 0.232 |       |      | 0.191 |       |      |
| Satd. Flow (perm)       | 1711                                                                               | 3319  | 0    | 1711  | 3437  | 0    | 418   | 1685  | 0    | 356   | 1812  | 0    |
| Right Turn on Red       |                                                                                    |       | Yes  |       |       | Yes  |       |       | Yes  |       |       | No   |
| Satd. Flow (RTOR)       |                                                                                    | 19    |      |       | 18    |      |       | 22    |      |       |       |      |
| Link Speed (mph)        |                                                                                    | 30    |      |       | 30    |      |       | 30    |      |       | 25    |      |
| Link Distance (ft)      |                                                                                    | 436   |      |       | 368   |      |       | 438   |      |       | 355   |      |
| Travel Time (s)         |                                                                                    | 9.9   |      |       | 8.4   |      |       | 10.0  |      |       | 9.7   |      |
| Peak Hour Factor        | 0.90                                                                               | 0.90  | 0.90 | 0.91  | 0.91  | 0.91 | 0.90  | 0.90  | 0.90 | 0.88  | 0.88  | 0.88 |
| Adj. Flow (vph)         | 96                                                                                 | 754   | 190  | 156   | 722   | 176  | 259   | 233   | 174  | 274   | 313   | 69   |
| Shared Lane Traffic (%) |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 96                                                                                 | 944   | 0    | 156   | 898   | 0    | 259   | 407   | 0    | 274   | 382   | 0    |
| Turn Type               | Prot                                                                               | NA    |      | Prot  | NA    |      | pm+pt | NA    |      | pm+pt | NA    |      |
| Protected Phases        | 5                                                                                  | 2     |      | 1     | 6     |      | 7     | 4     |      | 3     | 8     |      |
| Permitted Phases        |                                                                                    |       |      |       |       |      | 4     |       |      | 8     |       |      |
| Detector Phase          | 5                                                                                  | 2     |      | 1     | 6     |      | 7     | 4     |      | 3     | 8     |      |
| Switch Phase            |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Minimum Initial (s)     | 5.0                                                                                | 15.0  |      | 5.0   | 15.0  |      | 5.0   | 10.0  |      | 5.0   | 10.0  |      |
| Minimum Split (s)       | 9.7                                                                                | 21.6  |      | 9.7   | 21.6  |      | 9.3   | 16.8  |      | 9.3   | 16.8  |      |
| Total Split (s)         | 17.7                                                                               | 41.6  |      | 17.7  | 41.6  |      | 22.3  | 36.8  |      | 22.3  | 36.8  |      |
| Total Split (%)         | 11.7%                                                                              | 27.5% |      | 11.7% | 27.5% |      | 14.7% | 24.3% |      | 14.7% | 24.3% |      |
| Yellow Time (s)         | 3.0                                                                                | 4.1   |      | 3.0   | 4.1   |      | 3.3   | 4.4   |      | 3.3   | 4.4   |      |
| All-Red Time (s)        | 1.7                                                                                | 2.5   |      | 1.7   | 2.5   |      | 1.0   | 2.4   |      | 1.0   | 2.4   |      |
| Lost Time Adjust (s)    | 0.0                                                                                | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      |
| Total Lost Time (s)     | 4.7                                                                                | 6.6   |      | 4.7   | 6.6   |      | 4.3   | 6.8   |      | 4.3   | 6.8   |      |
| Lead/Lag                | Lead                                                                               | Lag   |      | Lead  | Lag   |      | Lead  | Lag   |      | Lead  | Lag   |      |
| Lead-Lag Optimize?      | Yes                                                                                | Yes   |      | Yes   | Yes   |      | Yes   | Yes   |      | Yes   | Yes   |      |
| Recall Mode             | None                                                                               | Min   |      | None  | Min   |      | None  | None  |      | None  | None  |      |
| Act Effct Green (s)     | 10.6                                                                               | 35.0  |      | 13.0  | 37.4  |      | 50.5  | 30.0  |      | 50.5  | 30.0  |      |
| Actuated g/C Ratio      | 0.09                                                                               | 0.30  |      | 0.11  | 0.32  |      | 0.43  | 0.25  |      | 0.43  | 0.25  |      |
| v/c Ratio               | 0.63                                                                               | 0.95  |      | 0.83  | 0.82  |      | 0.69  | 0.92  |      | 0.75  | 0.83  |      |
| Control Delay           | 69.6                                                                               | 59.1  |      | 85.8  | 44.3  |      | 31.0  | 68.0  |      | 36.0  | 58.7  |      |
| Queue Delay             | 0.0                                                                                | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      |
| Total Delay             | 69.6                                                                               | 59.1  |      | 85.8  | 44.3  |      | 31.0  | 68.0  |      | 36.0  | 58.7  |      |
| LOS                     | E                                                                                  | E     |      | F     | D     |      | C     | E     |      | D     | E     |      |
| Approach Delay          |                                                                                    | 60.1  |      |       | 50.5  |      |       | 53.6  |      |       | 49.2  |      |
| Approach LOS            |                                                                                    | E     |      |       | D     |      |       | D     |      |       | D     |      |
| Queue Length 50th (ft)  | 72                                                                                 | 365   |      | 118   | 327   |      | 122   | 289   |      | 130   | 277   |      |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Background Conditions Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |      |
|-------------------------|------|
| Lane Group              | Ø9   |
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 33.0 |
| Total Split (s)         | 33.0 |
| Total Split (%)         | 22%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Background Conditions Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  | 128                                                                               | #501                                                                              |                                                                                   | #235                                                                              | #445                                                                              |                                                                                   | 186                                                                                | #481                                                                                |                                                                                     | #215                                                                                | #417                                                                                |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 356                                                                               |                                                                                   |                                                                                   | 288                                                                               |                                                                                   |                                                                                    | 358                                                                                 |                                                                                     |                                                                                     | 275                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 200                                                                               |                                                                                   |                                                                                   | 175                                                                               |                                                                                   |                                                                                   | 210                                                                                |                                                                                     |                                                                                     | 170                                                                                 |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 187                                                                               | 994                                                                               |                                                                                   | 187                                                                               | 1096                                                                              |                                                                                   | 374                                                                                | 443                                                                                 |                                                                                     | 366                                                                                 | 459                                                                                 |                                                                                     |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       | 0.51                                                                              | 0.95                                                                              |                                                                                   | 0.83                                                                              | 0.82                                                                              |                                                                                   | 0.69                                                                               | 0.92                                                                                |                                                                                     | 0.75                                                                                | 0.83                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 151.4

Actuated Cycle Length: 118.4

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 53.8

Intersection LOS: D

Intersection Capacity Utilization 84.8%

ICU Level of Service E

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)

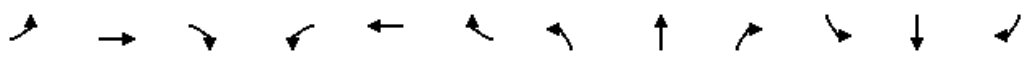
|                                                                                        |                                                                                        |                                                                                        |                                                                                         |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø9 |  Ø3 |  Ø4 |
| 17.7 s                                                                                 | 41.6 s                                                                                 | 33 s                                                                                   | 22.3 s                                                                                  | 36.8 s                                                                                   |
|  Ø5 |  Ø6 |                                                                                        |  Ø7 |  Ø8 |
| 17.7 s                                                                                 | 41.6 s                                                                                 |                                                                                        | 22.3 s                                                                                  | 36.8 s                                                                                   |



|                         |    |
|-------------------------|----|
| Lane Group              | Ø9 |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway/2040 Back St (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Saturday Midday

|                         |  |       |      |       |       |      |       |       |       |       |       |       |
|-------------------------|------------------------------------------------------------------------------------|-------|------|-------|-------|------|-------|-------|-------|-------|-------|-------|
| Lane Group              | EBL                                                                                | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
| Lane Configurations     |                                                                                    | ↔     |      |       | ↔     |      |       | ↔     | ↔     |       | ↔     | ↔     |
| Traffic Volume (vph)    | 94                                                                                 | 795   | 48   | 80    | 755   | 95   | 171   | 23    | 135   | 78    | 20    | 41    |
| Future Volume (vph)     | 94                                                                                 | 795   | 48   | 80    | 755   | 95   | 171   | 23    | 135   | 78    | 20    | 41    |
| Ideal Flow (vphpl)      | 1900                                                                               | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  |
| Lane Width (ft)         | 12                                                                                 | 11    | 12   | 12    | 11    | 12   | 12    | 13    | 13    | 12    | 13    | 13    |
| Storage Length (ft)     | 0                                                                                  |       | 0    | 0     |       | 0    | 0     |       | 25    | 0     |       | 25    |
| Storage Lanes           | 0                                                                                  |       | 0    | 0     |       | 0    | 0     |       | 1     | 0     |       | 1     |
| Taper Length (ft)       | 25                                                                                 |       |      | 25    |       |      | 25    |       |       | 25    |       |       |
| Lane Util. Factor       | 0.95                                                                               | 0.95  | 0.95 | 0.95  | 0.95  | 0.95 | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Frt                     |                                                                                    | 0.992 |      |       | 0.985 |      |       |       | 0.850 |       |       | 0.850 |
| Flt Protected           |                                                                                    | 0.995 |      |       | 0.996 |      |       | 0.958 |       |       | 0.962 |       |
| Satd. Flow (prot)       | 0                                                                                  | 3377  | 0    | 0     | 3356  | 0    | 0     | 1844  | 1636  | 0     | 1852  | 1636  |
| Flt Permitted           |                                                                                    | 0.628 |      |       | 0.753 |      |       | 0.668 |       |       | 0.677 |       |
| Satd. Flow (perm)       | 0                                                                                  | 2131  | 0    | 0     | 2538  | 0    | 0     | 1286  | 1636  | 0     | 1303  | 1636  |
| Right Turn on Red       |                                                                                    |       | Yes  |       |       | Yes  |       |       | Yes   |       |       | Yes   |
| Satd. Flow (RTOR)       |                                                                                    | 9     |      |       | 17    |      |       |       | 157   |       |       | 157   |
| Link Speed (mph)        |                                                                                    | 30    |      |       | 30    |      |       | 25    |       |       | 25    |       |
| Link Distance (ft)      |                                                                                    | 442   |      |       | 502   |      |       | 142   |       |       | 135   |       |
| Travel Time (s)         |                                                                                    | 10.0  |      |       | 11.4  |      |       | 3.9   |       |       | 3.7   |       |
| Peak Hour Factor        | 0.96                                                                               | 0.96  | 0.96 | 0.95  | 0.95  | 0.95 | 0.92  | 0.92  | 0.92  | 0.81  | 0.81  | 0.81  |
| Adj. Flow (vph)         | 98                                                                                 | 828   | 50   | 84    | 795   | 100  | 186   | 25    | 147   | 96    | 25    | 51    |
| Shared Lane Traffic (%) |                                                                                    |       |      |       |       |      |       |       |       |       |       |       |
| Lane Group Flow (vph)   | 0                                                                                  | 976   | 0    | 0     | 979   | 0    | 0     | 211   | 147   | 0     | 121   | 51    |
| Turn Type               | pm+pt                                                                              | NA    |      | Perm  | NA    |      | Perm  | NA    | Perm  | Perm  | NA    | Perm  |
| Protected Phases        | 1                                                                                  | 6     |      |       | 2     |      |       | 4     |       |       | 4     |       |
| Permitted Phases        | 6                                                                                  |       |      | 2     |       |      | 4     |       | 4     | 4     |       | 4     |
| Detector Phase          | 1                                                                                  | 6     |      | 2     | 2     |      | 4     | 4     | 4     | 4     | 4     | 4     |
| Switch Phase            |                                                                                    |       |      |       |       |      |       |       |       |       |       |       |
| Minimum Initial (s)     | 5.0                                                                                | 15.0  |      | 15.0  | 15.0  |      | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   |
| Minimum Split (s)       | 9.0                                                                                | 20.8  |      | 20.8  | 20.8  |      | 11.0  | 11.0  | 11.0  | 11.0  | 11.0  | 11.0  |
| Total Split (s)         | 9.0                                                                                | 39.0  |      | 30.0  | 30.0  |      | 14.0  | 14.0  | 14.0  | 14.0  | 14.0  | 14.0  |
| Total Split (%)         | 12.0%                                                                              | 52.0% |      | 40.0% | 40.0% |      | 18.7% | 18.7% | 18.7% | 18.7% | 18.7% | 18.7% |
| Yellow Time (s)         | 3.0                                                                                | 4.3   |      | 4.3   | 4.3   |      | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |
| All-Red Time (s)        | 1.0                                                                                | 1.5   |      | 1.5   | 1.5   |      | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s)    |                                                                                    | 0.0   |      |       | 0.0   |      |       | 0.0   | 0.0   |       | 0.0   | 0.0   |
| Total Lost Time (s)     |                                                                                    | 5.8   |      |       | 5.8   |      |       | 4.0   | 4.0   |       | 4.0   | 4.0   |
| Lead/Lag                | Lead                                                                               |       |      | Lag   | Lag   |      | Lag   | Lag   | Lag   | Lag   | Lag   | Lag   |
| Lead-Lag Optimize?      | Yes                                                                                |       |      | Yes   | Yes   |      | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Recall Mode             | Min                                                                                | C-Max |      | C-Max | C-Max |      | None  | None  | None  | None  | None  | None  |
| Act Effct Green (s)     |                                                                                    | 39.5  |      |       | 30.0  |      |       | 25.7  | 25.7  |       | 25.7  | 25.7  |
| Actuated g/C Ratio      |                                                                                    | 0.53  |      |       | 0.40  |      |       | 0.34  | 0.34  |       | 0.34  | 0.34  |
| v/c Ratio               |                                                                                    | 0.82  |      |       | 0.96  |      |       | 0.48  | 0.22  |       | 0.27  | 0.08  |
| Control Delay           |                                                                                    | 20.8  |      |       | 30.3  |      |       | 24.5  | 3.9   |       | 20.7  | 0.2   |
| Queue Delay             |                                                                                    | 0.0   |      |       | 0.0   |      |       | 0.0   | 0.0   |       | 0.0   | 0.0   |
| Total Delay             |                                                                                    | 20.8  |      |       | 30.3  |      |       | 24.5  | 3.9   |       | 20.7  | 0.2   |
| LOS                     |                                                                                    | C     |      |       | C     |      |       | C     | A     |       | C     | A     |
| Approach Delay          |                                                                                    | 20.8  |      |       | 30.3  |      |       | 16.1  |       |       | 14.6  |       |
| Approach LOS            |                                                                                    | C     |      |       | C     |      |       | B     |       |       | B     |       |
| Queue Length 50th (ft)  |                                                                                    | 136   |      |       | 70    |      |       | 79    | 0     |       | 42    | 0     |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway 2040 Backgr (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

| Lane Group              | Ø3   |
|-------------------------|------|
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 3    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 22.0 |
| Total Split (s)         | 22.0 |
| Total Split (%)         | 29%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                | Lead |
| Lead-Lag Optimize?      | Yes  |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | #201                                                                              |                                                                                   |                                                                                   | #150                                                                              |                                                                                   |                                                                                    | 139                                                                                 | 32                                                                                  |                                                                                     | 71                                                                                  | 0                                                                                   |
| Internal Link Dist (ft) |                                                                                   | 362                                                                               |                                                                                   |                                                                                   | 422                                                                               |                                                                                   |                                                                                    | 62                                                                                  |                                                                                     |                                                                                     | 55                                                                                  |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |
| Base Capacity (vph)     |                                                                                   | 1188                                                                              |                                                                                   |                                                                                   | 1025                                                                              |                                                                                   |                                                                                    | 440                                                                                 | 663                                                                                 |                                                                                     | 446                                                                                 | 663                                                                                 |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       |                                                                                   | 0.82                                                                              |                                                                                   |                                                                                   | 0.96                                                                              |                                                                                   |                                                                                    | 0.48                                                                                | 0.22                                                                                |                                                                                     | 0.27                                                                                | 0.08                                                                                |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 19 (25%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 23.5

Intersection LOS: C

Intersection Capacity Utilization 82.8%

ICU Level of Service E

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                            |                                                                                        |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø3 |  Ø4 |
| 9 s                                                                                        | 30 s                                                                                       | 22 s                                                                                   | 14 s                                                                                     |
|  Ø6 (R) |                                                                                            |                                                                                        |                                                                                          |
| 39 s                                                                                       |                                                                                            |                                                                                        |                                                                                          |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø3 |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |



# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) Background Conditions Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |  |  |  |                                                                                     |
| Traffic Volume (vph)    | 12                                                                                | 901                                                                               | 130                                                                               | 58                                                                                | 884                                                                               | 0                                                                                 | 122                                                                                | 3                                                                                   | 52                                                                                  | 3                                                                                   | 1                                                                                   | 10                                                                                  |
| Future Volume (vph)     | 12                                                                                | 901                                                                               | 130                                                                               | 58                                                                                | 884                                                                               | 0                                                                                 | 122                                                                                | 3                                                                                   | 52                                                                                  | 3                                                                                   | 1                                                                                   | 10                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                 | 10                                                                                  | 10                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 250                                                                                 | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes           | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.981                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     | 0.862                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.999                                                                             |                                                                                   |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                    | 0.953                                                                               |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3353                                                                              | 0                                                                                 | 0                                                                                 | 3411                                                                              | 0                                                                                 | 0                                                                                  | 1657                                                                                | 1478                                                                                | 1770                                                                                | 1606                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.946                                                                             |                                                                                   |                                                                                   | 0.792                                                                             |                                                                                   |                                                                                    | 0.723                                                                               |                                                                                     | 0.672                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 3175                                                                              | 0                                                                                 | 0                                                                                 | 2710                                                                              | 0                                                                                 | 0                                                                                  | 1257                                                                                | 1478                                                                                | 1252                                                                                | 1606                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 42                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 111                                                                                 |                                                                                     | 11                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 502                                                                               |                                                                                   |                                                                                   | 407                                                                               |                                                                                   |                                                                                    | 423                                                                                 |                                                                                     |                                                                                     | 198                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                    | 11.5                                                                                |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.98                                                                               | 0.98                                                                                | 0.98                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                |
| Adj. Flow (vph)         | 13                                                                                | 1001                                                                              | 144                                                                               | 60                                                                                | 911                                                                               | 0                                                                                 | 124                                                                                | 3                                                                                   | 53                                                                                  | 3                                                                                   | 1                                                                                   | 11                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 1158                                                                              | 0                                                                                 | 0                                                                                 | 971                                                                               | 0                                                                                 | 0                                                                                  | 127                                                                                 | 53                                                                                  | 3                                                                                   | 12                                                                                  | 0                                                                                   |
| Turn Type               | pm+pt                                                                             | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  | Perm                                                                                | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        | 1                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                  |                                                                                     | 4                                                                                   | 4                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                  | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 3.0                                                                               | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0                                                                                | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 7.3                                                                               | 21.3                                                                              |                                                                                   | 21.3                                                                              | 21.3                                                                              |                                                                                   | 11.9                                                                               | 11.9                                                                                | 11.9                                                                                | 11.9                                                                                | 11.9                                                                                |                                                                                     |
| Total Split (s)         | 7.3                                                                               | 55.0                                                                              |                                                                                   | 47.7                                                                              | 47.7                                                                              |                                                                                   | 20.0                                                                               | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                | 20.0                                                                                |                                                                                     |
| Total Split (%)         | 9.7%                                                                              | 73.3%                                                                             |                                                                                   | 63.6%                                                                             | 63.6%                                                                             |                                                                                   | 26.7%                                                                              | 26.7%                                                                               | 26.7%                                                                               | 26.7%                                                                               | 26.7%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.3                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.0                                                                               | 1.3                                                                               |                                                                                   | 1.3                                                                               | 1.3                                                                               |                                                                                   | 1.9                                                                                | 1.9                                                                                 | 1.9                                                                                 | 1.9                                                                                 | 1.9                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 6.3                                                                               |                                                                                   |                                                                                   | 6.3                                                                               |                                                                                   |                                                                                    | 4.9                                                                                 | 4.9                                                                                 | 4.9                                                                                 | 4.9                                                                                 |                                                                                     |
| Lead/Lag                | Lead                                                                              |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | Max                                                                               | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 55.1                                                                              |                                                                                   |                                                                                   | 41.4                                                                              |                                                                                   |                                                                                    | 11.1                                                                                | 11.1                                                                                | 11.1                                                                                | 11.1                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.73                                                                              |                                                                                   |                                                                                   | 0.55                                                                              |                                                                                   |                                                                                    | 0.15                                                                                | 0.15                                                                                | 0.15                                                                                | 0.15                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.49                                                                              |                                                                                   |                                                                                   | 0.65                                                                              |                                                                                   |                                                                                    | 0.68                                                                                | 0.17                                                                                | 0.02                                                                                | 0.05                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 4.2                                                                               |                                                                                   |                                                                                   | 8.5                                                                               |                                                                                   |                                                                                    | 48.2                                                                                | 1.8                                                                                 | 25.0                                                                                | 14.9                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.1                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 4.3                                                                               |                                                                                   |                                                                                   | 8.5                                                                               |                                                                                   |                                                                                    | 48.2                                                                                | 1.8                                                                                 | 25.0                                                                                | 14.9                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | D                                                                                   | A                                                                                   | C                                                                                   | B                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 4.3                                                                               |                                                                                   |                                                                                   | 8.5                                                                               |                                                                                   |                                                                                    | 34.6                                                                                |                                                                                     |                                                                                     | 16.9                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 64                                                                                |                                                                                   |                                                                                   | 52                                                                                |                                                                                   |                                                                                    | 57                                                                                  | 0                                                                                   | 1                                                                                   | 0                                                                                   |                                                                                     |

# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) Background Conditions Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 125                                                                               |                                                                                   |                                                                                   | 63                                                                                |                                                                                   |                                                                                    | 106                                                                                 | 4                                                                                   | 8                                                                                   | 13                                                                                  |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 422                                                                               |                                                                                   |                                                                                   | 327                                                                               |                                                                                   |                                                                                    | 343                                                                                 |                                                                                     |                                                                                     | 118                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 250                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 2359                                                                              |                                                                                   |                                                                                   | 1495                                                                              |                                                                                   |                                                                                    | 253                                                                                 | 386                                                                                 | 252                                                                                 | 332                                                                                 |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 274                                                                               |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.56                                                                              |                                                                                   |                                                                                   | 0.65                                                                              |                                                                                   |                                                                                    | 0.50                                                                                | 0.14                                                                                | 0.01                                                                                | 0.04                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 21 (28%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 8.5

Intersection LOS: A

Intersection Capacity Utilization 83.7%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                           |                                                                                         |
|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|  Ø1      |  Ø2 (R) |  Ø4 |
| 7.3 s                                                                                      | 47.7 s                                                                                    | 20 s                                                                                    |
|  Ø6 (R) |                                                                                           |                                                                                         |
| 55 s                                                                                       |                                                                                           |                                                                                         |

## 108: Burroughs Road &amp; Route 58 (Black Rock Turnpike)

## 2040 Background Conditions

## Lanes, Volumes, Timings

Timing Plan: Saturday Midday

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 80                                                                                | 874                                                                               | 15                                                                                | 4                                                                                 | 861                                                                               | 112                                                                               | 20                                                                                 | 64                                                                                  | 10                                                                                  | 126                                                                                 | 52                                                                                  | 65                                                                                  |
| Future Volume (vph)     | 80                                                                                | 874                                                                               | 15                                                                                | 4                                                                                 | 861                                                                               | 112                                                                               | 20                                                                                 | 64                                                                                  | 10                                                                                  | 126                                                                                 | 52                                                                                  | 65                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                 | 16                                                                                  | 12                                                                                  | 12                                                                                  | 16                                                                                  | 12                                                                                  |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   | 0.983                                                                             |                                                                                   |                                                                                    | 0.986                                                                               |                                                                                     |                                                                                     | 0.964                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 0.989                                                                               |                                                                                     |                                                                                     | 0.975                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3401                                                                              | 0                                                                                 | 0                                                                                 | 3363                                                                              | 0                                                                                 | 0                                                                                  | 2059                                                                                | 0                                                                                   | 0                                                                                   | 1984                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.762                                                                             |                                                                                   |                                                                                   | 0.952                                                                             |                                                                                   |                                                                                    | 0.897                                                                               |                                                                                     |                                                                                     | 0.813                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 2602                                                                              | 0                                                                                 | 0                                                                                 | 3202                                                                              | 0                                                                                 | 0                                                                                  | 1867                                                                                | 0                                                                                   | 0                                                                                   | 1655                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 3                                                                                 |                                                                                   |                                                                                   | 27                                                                                |                                                                                   |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     | 27                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 407                                                                               |                                                                                   |                                                                                   | 996                                                                               |                                                                                   |                                                                                    | 466                                                                                 |                                                                                     |                                                                                     | 300                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                   | 22.6                                                                              |                                                                                   |                                                                                    | 12.7                                                                                |                                                                                     |                                                                                     | 8.2                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.88                                                                               | 0.88                                                                                | 0.88                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Adj. Flow (vph)         | 87                                                                                | 950                                                                               | 16                                                                                | 4                                                                                 | 906                                                                               | 118                                                                               | 23                                                                                 | 73                                                                                  | 11                                                                                  | 135                                                                                 | 56                                                                                  | 70                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 1053                                                                              | 0                                                                                 | 0                                                                                 | 1028                                                                              | 0                                                                                 | 0                                                                                  | 107                                                                                 | 0                                                                                   | 0                                                                                   | 261                                                                                 | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                  |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 6                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                  | 4                                                                                   |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 15.0                                                                              | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 9.0                                                                                | 9.0                                                                                 |                                                                                     | 9.0                                                                                 | 9.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 20.6                                                                              | 20.6                                                                              |                                                                                   | 20.6                                                                              | 20.6                                                                              |                                                                                   | 14.4                                                                               | 14.4                                                                                |                                                                                     | 14.4                                                                                | 14.4                                                                                |                                                                                     |
| Total Split (s)         | 44.0                                                                              | 44.0                                                                              |                                                                                   | 44.0                                                                              | 44.0                                                                              |                                                                                   | 31.0                                                                               | 31.0                                                                                |                                                                                     | 31.0                                                                                | 31.0                                                                                |                                                                                     |
| Total Split (%)         | 58.7%                                                                             | 58.7%                                                                             |                                                                                   | 58.7%                                                                             | 58.7%                                                                             |                                                                                   | 41.3%                                                                              | 41.3%                                                                               |                                                                                     | 41.3%                                                                               | 41.3%                                                                               |                                                                                     |
| Yellow Time (s)         | 4.1                                                                               | 4.1                                                                               |                                                                                   | 4.1                                                                               | 4.1                                                                               |                                                                                   | 3.1                                                                                | 3.1                                                                                 |                                                                                     | 3.1                                                                                 | 3.1                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.5                                                                               | 1.5                                                                               |                                                                                   | 1.5                                                                               | 1.5                                                                               |                                                                                   | 2.3                                                                                | 2.3                                                                                 |                                                                                     | 2.3                                                                                 | 2.3                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                    | 5.4                                                                                 |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | C-Max                                                                             | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                               | None                                                                                |                                                                                     | None                                                                                | None                                                                                |                                                                                     |
| Act Effct Green (s)     |                                                                                   | 48.4                                                                              |                                                                                   |                                                                                   | 48.4                                                                              |                                                                                   |                                                                                    | 15.6                                                                                |                                                                                     |                                                                                     | 15.6                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.65                                                                              |                                                                                   |                                                                                   | 0.65                                                                              |                                                                                   |                                                                                    | 0.21                                                                                |                                                                                     |                                                                                     | 0.21                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.63                                                                              |                                                                                   |                                                                                   | 0.50                                                                              |                                                                                   |                                                                                    | 0.27                                                                                |                                                                                     |                                                                                     | 0.72                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 7.1                                                                               |                                                                                   |                                                                                   | 8.6                                                                               |                                                                                   |                                                                                    | 23.0                                                                                |                                                                                     |                                                                                     | 35.1                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 7.1                                                                               |                                                                                   |                                                                                   | 8.6                                                                               |                                                                                   |                                                                                    | 23.0                                                                                |                                                                                     |                                                                                     | 35.1                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 7.1                                                                               |                                                                                   |                                                                                   | 8.6                                                                               |                                                                                   |                                                                                    | 23.0                                                                                |                                                                                     |                                                                                     | 35.1                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 48                                                                                |                                                                                   |                                                                                   | 110                                                                               |                                                                                   |                                                                                    | 39                                                                                  |                                                                                     |                                                                                     | 102                                                                                 |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 77                                                                                |                                                                                   |                                                                                   | 200                                                                               |                                                                                   |                                                                                    | 69                                                                                  |                                                                                     |                                                                                     | 159                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 327                                                                               |                                                                                   |                                                                                   | 916                                                                               |                                                                                   |                                                                                    | 386                                                                                 |                                                                                     |                                                                                     | 220                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

108: Burroughs Road & Route 58 (Black Rock Turnpike)  
Lanes, Volumes, Timings

2040 Background Conditions

Timing Plan: Saturday MIDDAY

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Base Capacity (vph)    |                                                                                   | 1680                                                                              |                                                                                   |                                                                                   | 2075                                                                              |                                                                                   |                                                                                    | 642                                                                                 |                                                                                     |                                                                                     | 582                                                                                 |                                                                                     |
| Starvation Cap Reductn |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   | 0.63                                                                              |                                                                                   |                                                                                   | 0.50                                                                              |                                                                                   |                                                                                    | 0.17                                                                                |                                                                                     |                                                                                     | 0.45                                                                                |                                                                                     |

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 20 (27%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 11.4

Intersection LOS: B

Intersection Capacity Utilization 88.6%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)

|                                                                                          |                                                                                   |
|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|  Ø2 (R) |  |
| 44 s                                                                                     | 31 s                                                                              |
|  Ø6 (R) |  |
| 44 s                                                                                     | 31 s                                                                              |

# 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) 2049 Black Rock Turnpike

## Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         | →     | ↖     | ↗    | ↘     | ↙     | ↘     | ↗    | ↙     | ↘     | ↗    | ↙    | ↘     |
|-------------------------|-------|-------|------|-------|-------|-------|------|-------|-------|------|------|-------|
| Lane Group              | EBT   | EBR   | EBR2 | WBL2  | WBL   | WBT   | WBR  | NWL2  | NWL   | NWR  | NWR2 | NEL   |
| Lane Configurations     | ↖     | ↗     |      |       |       | ↖     |      |       | ↗     |      |      |       |
| Traffic Volume (vph)    | 433   | 553   | 5    | 67    | 3     | 471   | 1    | 4     | 468   | 10   | 35   | 5     |
| Future Volume (vph)     | 433   | 553   | 5    | 67    | 3     | 471   | 1    | 4     | 468   | 10   | 35   | 5     |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900 | 1900  |
| Lane Width (ft)         | 12    | 12    | 12   | 12    | 11    | 11    | 12   | 12    | 10    | 12   | 12   | 12    |
| Lane Util. Factor       | 1.00  | 1.00  | 1.00 | 0.95  | 0.95  | 0.95  | 0.95 | 0.95  | 0.97  | 0.95 | 0.95 | 1.00  |
| Frt                     |       | 0.850 |      |       |       |       |      |       | 0.987 |      |      |       |
| Flt Protected           |       |       |      |       |       | 0.994 |      |       | 0.956 |      |      |       |
| Satd. Flow (prot)       | 1863  | 1583  | 0    | 0     | 0     | 3401  | 0    | 0     | 3182  | 0    | 0    | 0     |
| Flt Permitted           |       |       |      |       |       | 0.717 |      |       | 0.948 |      |      |       |
| Satd. Flow (perm)       | 1863  | 1583  | 0    | 0     | 0     | 2453  | 0    | 0     | 3156  | 0    | 0    | 0     |
| Right Turn on Red       |       |       | Yes  |       |       |       | Yes  |       |       |      | Yes  |       |
| Satd. Flow (RTOR)       |       | 57    |      |       |       |       |      |       | 152   |      |      |       |
| Link Speed (mph)        | 30    |       |      |       |       | 30    |      |       | 30    |      |      |       |
| Link Distance (ft)      | 996   |       |      |       |       | 549   |      |       | 218   |      |      |       |
| Travel Time (s)         | 22.6  |       |      |       |       | 12.5  |      |       | 5.0   |      |      |       |
| Peak Hour Factor        | 0.94  | 0.94  | 0.94 | 0.92  | 0.92  | 0.92  | 0.92 | 0.96  | 0.96  | 0.96 | 0.96 | 0.80  |
| Adj. Flow (vph)         | 461   | 588   | 5    | 73    | 3     | 512   | 1    | 4     | 488   | 10   | 36   | 6     |
| Shared Lane Traffic (%) |       |       |      |       |       |       |      |       |       |      |      |       |
| Lane Group Flow (vph)   | 461   | 593   | 0    | 0     | 0     | 589   | 0    | 0     | 538   | 0    | 0    | 0     |
| Turn Type               | NA    | pm+ov |      | Perm  | Perm  | NA    |      | D.Pm  | Prot  |      |      | Perm  |
| Protected Phases        | 2     | 4     |      |       |       | 2     |      |       | 4     |      |      |       |
| Permitted Phases        |       | 2     |      | 2     | 2     |       |      | 4     |       |      |      | 5     |
| Detector Phase          | 2     | 4     |      | 2     | 2     | 2     |      | 4     | 4     |      |      | 5     |
| Switch Phase            |       |       |      |       |       |       |      |       |       |      |      |       |
| Minimum Initial (s)     | 15.0  | 9.0   |      | 15.0  | 15.0  | 15.0  |      | 9.0   | 9.0   |      |      | 5.0   |
| Minimum Split (s)       | 22.8  | 15.4  |      | 22.8  | 22.8  | 22.8  |      | 15.4  | 15.4  |      |      | 12.6  |
| Total Split (s)         | 35.8  | 33.4  |      | 35.8  | 35.8  | 35.8  |      | 33.4  | 33.4  |      |      | 19.6  |
| Total Split (%)         | 40.3% | 37.6% |      | 40.3% | 40.3% | 40.3% |      | 37.6% | 37.6% |      |      | 22.1% |
| Yellow Time (s)         | 4.1   | 3.3   |      | 4.1   | 4.1   | 4.1   |      | 3.3   | 3.3   |      |      | 3.3   |
| All-Red Time (s)        | 3.7   | 3.1   |      | 3.7   | 3.7   | 3.7   |      | 3.1   | 3.1   |      |      | 4.3   |
| Lost Time Adjust (s)    | 0.0   | 0.0   |      |       |       | 0.0   |      |       | 0.0   |      |      |       |
| Total Lost Time (s)     | 7.8   | 6.4   |      |       |       | 7.8   |      |       | 6.4   |      |      |       |
| Lead/Lag                |       |       |      |       |       |       |      |       |       |      |      |       |
| Lead-Lag Optimize?      |       |       |      |       |       |       |      |       |       |      |      |       |
| Recall Mode             | Min   | None  |      | Min   | Min   | Min   |      | None  | None  |      |      | None  |
| Act Effct Green (s)     | 21.3  | 46.3  |      |       |       | 21.3  |      |       | 12.8  |      |      |       |
| Actuated g/C Ratio      | 0.38  | 0.82  |      |       |       | 0.38  |      |       | 0.23  |      |      |       |
| v/c Ratio               | 0.65  | 0.45  |      |       |       | 0.63  |      |       | 0.65  |      |      |       |
| Control Delay           | 21.6  | 4.6   |      |       |       | 19.7  |      |       | 19.6  |      |      |       |
| Queue Delay             | 0.0   | 0.0   |      |       |       | 0.0   |      |       | 0.0   |      |      |       |
| Total Delay             | 21.6  | 4.6   |      |       |       | 19.7  |      |       | 19.6  |      |      |       |
| LOS                     | C     | A     |      |       |       | B     |      |       | B     |      |      |       |
| Approach Delay          | 12.0  |       |      |       |       | 19.7  |      |       | 19.6  |      |      |       |
| Approach LOS            | B     |       |      |       |       | B     |      |       | B     |      |      |       |
| Queue Length 50th (ft)  | 139   | 73    |      |       |       | 92    |      |       | 66    |      |      |       |
| Queue Length 95th (ft)  | 279   | 147   |      |       |       | 173   |      |       | 130   |      |      |       |
| Internal Link Dist (ft) | 916   |       |      |       |       | 469   |      |       | 138   |      |      |       |
| Turn Bay Length (ft)    |       |       |      |       |       |       |      |       |       |      |      |       |



109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)  
 Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | NET                                                                               | NER                                                                               | NER2                                                                              | SWL2                                                                              | SWL                                                                               | SWT                                                                               | SWR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |                                                                                   |
| Traffic Volume (vph)    | 3                                                                                 | 1                                                                                 | 5                                                                                 | 3                                                                                 | 8                                                                                 | 1                                                                                 | 6                                                                                 |
| Future Volume (vph)     | 3                                                                                 | 1                                                                                 | 5                                                                                 | 3                                                                                 | 8                                                                                 | 1                                                                                 | 6                                                                                 |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 15                                                                                | 12                                                                                | 12                                                                                |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.944                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.953                                                                             |                                                                                   |
| Flt Protected           | 0.983                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.970                                                                             |                                                                                   |
| Satd. Flow (prot)       | 1729                                                                              | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1722                                                                              | 0                                                                                 |
| Flt Permitted           | 0.902                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1586                                                                              | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1775                                                                              | 0                                                                                 |
| Right Turn on Red       |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   |                                                                                   | No                                                                                |
| Satd. Flow (RTOR)       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |
| Link Distance (ft)      | 653                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 695                                                                               |                                                                                   |
| Travel Time (s)         | 17.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 19.0                                                                              |                                                                                   |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              |
| Adj. Flow (vph)         | 4                                                                                 | 1                                                                                 | 6                                                                                 | 4                                                                                 | 10                                                                                | 1                                                                                 | 8                                                                                 |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 17                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 23                                                                                | 0                                                                                 |
| Turn Type               | NA                                                                                |                                                                                   |                                                                                   |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   |
| Protected Phases        | 5                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 5                                                                                 |                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   |
| Detector Phase          | 5                                                                                 |                                                                                   |                                                                                   |                                                                                   | 5                                                                                 | 5                                                                                 |                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)     | 5.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   |
| Minimum Split (s)       | 12.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 12.6                                                                              | 12.6                                                                              |                                                                                   |
| Total Split (s)         | 19.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 19.6                                                                              | 19.6                                                                              |                                                                                   |
| Total Split (%)         | 22.1%                                                                             |                                                                                   |                                                                                   |                                                                                   | 22.1%                                                                             | 22.1%                                                                             |                                                                                   |
| Yellow Time (s)         | 3.3                                                                               |                                                                                   |                                                                                   |                                                                                   | 3.3                                                                               | 3.3                                                                               |                                                                                   |
| All-Red Time (s)        | 4.3                                                                               |                                                                                   |                                                                                   |                                                                                   | 4.3                                                                               | 4.3                                                                               |                                                                                   |
| Lost Time Adjust (s)    | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |
| Total Lost Time (s)     | 7.6                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Recall Mode             | None                                                                              |                                                                                   |                                                                                   |                                                                                   | None                                                                              | None                                                                              |                                                                                   |
| Act Effect Green (s)    | 5.9                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 5.9                                                                               |                                                                                   |
| Actuated g/C Ratio      | 0.10                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.10                                                                              |                                                                                   |
| v/c Ratio               | 0.10                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.12                                                                              |                                                                                   |
| Control Delay           | 31.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 31.5                                                                              |                                                                                   |
| Queue Delay             | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |
| Total Delay             | 31.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 31.5                                                                              |                                                                                   |
| LOS                     | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |
| Approach Delay          | 31.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 31.5                                                                              |                                                                                   |
| Approach LOS            | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |
| Queue Length 50th (ft)  | 6                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |
| Queue Length 95th (ft)  | 23                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 28                                                                                |                                                                                   |
| Internal Link Dist (ft) | 573                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 615                                                                               |                                                                                   |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike)
204: Black Rock Turnpike & Route 58 (Black Rock Turnpike)

Timing Plan: Saturday MIDDAY

|                                                                                                                                  |  |  |  |     |  |  |  |  |     |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                                                                                                                       | EBT                                                                               | EBR                                                                               | EBR2                                                                              | WBL2                                                                                 | WBL                                                                               | WBT                                                                               | WBR                                                                                | NWL2                                                                                | NWL                                                                                    | NWR                                                                                 | NWR2                                                                                | NEL                                                                                 |
| Base Capacity (vph)                                                                                                              | 1008                                                                              | 1476                                                                              |                                                                                   |                                                                                      |                                                                                   | 1327                                                                              |                                                                                    |                                                                                     | 1720                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Starvation Cap Reductn                                                                                                           | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                      |                                                                                   | 0                                                                                 |                                                                                    |                                                                                     | 0                                                                                      |                                                                                     |                                                                                     |                                                                                     |
| Spillback Cap Reductn                                                                                                            | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                      |                                                                                   | 0                                                                                 |                                                                                    |                                                                                     | 0                                                                                      |                                                                                     |                                                                                     |                                                                                     |
| Storage Cap Reductn                                                                                                              | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                      |                                                                                   | 0                                                                                 |                                                                                    |                                                                                     | 0                                                                                      |                                                                                     |                                                                                     |                                                                                     |
| Reduced v/c Ratio                                                                                                                | 0.46                                                                              | 0.40                                                                              |                                                                                   |                                                                                      |                                                                                   | 0.44                                                                              |                                                                                    |                                                                                     | 0.31                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary                                                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                      |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                        |                                                                                     |                                                                                     |                                                                                     |
| Area Type:                                                                                                                       | Other                                                                             |                                                                                   |                                                                                   |                                                                                      |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                        |                                                                                     |                                                                                     |                                                                                     |
| Cycle Length: 88.8                                                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                      |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                        |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length: 56.3                                                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                      |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                        |                                                                                     |                                                                                     |                                                                                     |
| Natural Cycle: 60                                                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                      |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                        |                                                                                     |                                                                                     |                                                                                     |
| Control Type: Actuated-Uncoordinated                                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                      |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                        |                                                                                     |                                                                                     |                                                                                     |
| Maximum v/c Ratio: 0.65                                                                                                          |                                                                                   |                                                                                   |                                                                                   |                                                                                      |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                        |                                                                                     |                                                                                     |                                                                                     |
| Intersection Signal Delay: 16.2                                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                      |                                                                                   | Intersection LOS: B                                                               |                                                                                    |                                                                                     |                                                                                        |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization 81.6%                                                                                          |                                                                                   |                                                                                   |                                                                                   |                                                                                      |                                                                                   | ICU Level of Service D                                                            |                                                                                    |                                                                                     |                                                                                        |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min) 15                                                                                                         |                                                                                   |                                                                                   |                                                                                   |                                                                                      |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                        |                                                                                     |                                                                                     |                                                                                     |
| Splits and Phases: 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)/Route 58 |                                                                                   |                                                                                   |                                                                                   |                                                                                      |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                        |                                                                                     |                                                                                     |                                                                                     |
|  Ø2                                             |                                                                                   |                                                                                   |                                                                                   |  Ø4 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |  Ø5 |                                                                                     |                                                                                     |                                                                                     |
| 35.8 s                                                                                                                           |                                                                                   |                                                                                   |                                                                                   | 33.4 s                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 19.6 s                                                                                 |                                                                                     |                                                                                     |                                                                                     |

## Timing Plan: Saturday Midday

Synchro 9 Report  
Page 24

201: Tunxis Hill Road & Route 58 (Tunxis Hill Cutoff)  
Lanes, Volumes, Timings

2040 Background Conditions

Timing Plan: Saturday MIDDAY

|                         | →     | ↘    | ↙    | ←     | ↖     | ↗     |
|-------------------------|-------|------|------|-------|-------|-------|
| Lane Group              | EBT   | EBR  | WBL  | WBT   | NBL   | NBR   |
| Lane Configurations     | ↑↑    |      |      | ↑     | ↑     | ↑     |
| Traffic Volume (vph)    | 486   | 11   | 41   | 519   | 5     | 57    |
| Future Volume (vph)     | 486   | 11   | 41   | 519   | 5     | 57    |
| Ideal Flow (vphpl)      | 1900  | 1900 | 1900 | 1900  | 1900  | 1900  |
| Lane Width (ft)         | 11    | 12   | 12   | 11    | 10    | 10    |
| Storage Length (ft)     |       | 0    | 0    |       | 0     | 50    |
| Storage Lanes           |       | 0    | 0    |       | 1     | 1     |
| Taper Length (ft)       |       |      | 25   |       | 25    |       |
| Lane Util. Factor       | 0.95  | 0.95 | 1.00 | 1.00  | 1.00  | 1.00  |
| Frt                     | 0.997 |      |      |       |       | 0.850 |
| Flt Protected           |       |      |      | 0.996 | 0.950 |       |
| Satd. Flow (prot)       | 3411  | 0    | 0    | 1793  | 1652  | 1478  |
| Flt Permitted           |       |      |      | 0.996 | 0.950 |       |
| Satd. Flow (perm)       | 3411  | 0    | 0    | 1793  | 1652  | 1478  |
| Link Speed (mph)        | 30    |      |      | 30    | 25    |       |
| Link Distance (ft)      | 1095  |      |      | 214   | 782   |       |
| Travel Time (s)         | 24.9  |      |      | 4.9   | 21.3  |       |
| Peak Hour Factor        | 0.88  | 0.88 | 0.90 | 0.90  | 0.80  | 0.80  |
| Adj. Flow (vph)         | 552   | 13   | 46   | 577   | 6     | 71    |
| Shared Lane Traffic (%) |       |      |      |       |       |       |
| Lane Group Flow (vph)   | 565   | 0    | 0    | 623   | 6     | 71    |
| Sign Control            | Free  |      |      | Free  | Stop  |       |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 56.7% ICU Level of Service B

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↑↑   |      |      | ↑    | ↑    | ↑    |
| Traffic Vol, veh/h       | 486  | 11   | 41   | 519  | 5    | 57   |
| Future Vol, veh/h        | 486  | 11   | 41   | 519  | 5    | 57   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | 0    | 50   |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 88   | 88   | 90   | 90   | 80   | 80   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 552  | 13   | 46   | 577  | 6    | 71   |

| Major/Minor          | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0      | 0      | 565    |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Critical Hdwy        | -      | -      | 4.13   |
| Critical Hdwy Stg 1  | -      | -      | -      |
| Critical Hdwy Stg 2  | -      | -      | -      |
| Follow-up Hdwy       | -      | -      | 2.219  |
| Pot Cap-1 Maneuver   | -      | -      | 1005   |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | -      | -      | 1005   |
| Mov Cap-2 Maneuver   | -      | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |

| Approach             | EB | WB  | NB   |
|----------------------|----|-----|------|
| HCM Control Delay, s | 0  | 0.6 | 11.9 |
| HCM LOS              |    |     | B    |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | 171   | 716   | -   | -   | 1005  | -   |
| HCM Lane V/C Ratio    | 0.037 | 0.1   | -   | -   | 0.045 | -   |
| HCM Control Delay (s) | 26.9  | 10.6  | -   | -   | 8.8   | 0   |
| HCM Lane LOS          | D     | B     | -   | -   | A     | A   |
| HCM 95th %tile Q(veh) | 0.1   | 0.3   | -   | -   | 0.1   | -   |



202: Route 732 (Black Rock Turnpike) & Judd Street  
Lanes, Volumes, Timings

2040 Background Conditions  
Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (vph)    | 22                                                                                | 74                                                                                | 49                                                                                | 495                                                                               | 599                                                                               | 34                                                                                |
| Future Volume (vph)     | 22                                                                                | 74                                                                                | 49                                                                                | 495                                                                               | 599                                                                               | 34                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Storage Length (ft)     | 0                                                                                 | 0                                                                                 | 25                                                                                |                                                                                   |                                                                                   | 0                                                                                 |
| Storage Lanes           | 1                                                                                 | 0                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 25                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.896                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.993                                                                             |                                                                                   |
| Flt Protected           | 0.989                                                                             |                                                                                   |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1871                                                                              | 0                                                                                 | 0                                                                                 | 3525                                                                              | 1850                                                                              | 0                                                                                 |
| Flt Permitted           | 0.989                                                                             |                                                                                   |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1871                                                                              | 0                                                                                 | 0                                                                                 | 3525                                                                              | 1850                                                                              | 0                                                                                 |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 586                                                                               |                                                                                   |                                                                                   | 395                                                                               | 218                                                                               |                                                                                   |
| Travel Time (s)         | 16.0                                                                              |                                                                                   |                                                                                   | 9.0                                                                               | 5.0                                                                               |                                                                                   |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.98                                                                              | 0.98                                                                              | 0.93                                                                              | 0.93                                                                              |
| Adj. Flow (vph)         | 28                                                                                | 93                                                                                | 50                                                                                | 505                                                                               | 644                                                                               | 37                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 121                                                                               | 0                                                                                 | 0                                                                                 | 555                                                                               | 681                                                                               | 0                                                                                 |
| Sign Control            | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 64.1% ICU Level of Service C

Analysis Period (min) 15

Intersection

Int Delay, s/veh 2.1

| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | W    |      |      | W    | W    |      |
| Traffic Vol, veh/h       | 22   | 74   | 49   | 495  | 599  | 34   |
| Future Vol, veh/h        | 22   | 74   | 49   | 495  | 599  | 34   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 0    | -    | 25   | -    | -    | -    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 80   | 80   | 98   | 98   | 93   | 93   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 28   | 93   | 50   | 505  | 644  | 37   |

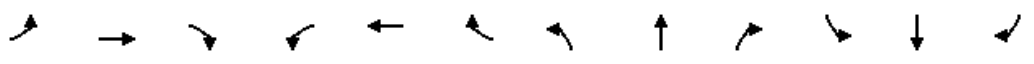
| Major/Minor          | Minor2 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 1015   | 662    | 681    |
| Stage 1              | 662    | -      | -      |
| Stage 2              | 353    | -      | -      |
| Critical Hdwy        | 6.63   | 6.23   | 4.13   |
| Critical Hdwy Stg 1  | 5.43   | -      | -      |
| Critical Hdwy Stg 2  | 5.83   | -      | -      |
| Follow-up Hdwy       | 3.519  | 3.319  | 2.219  |
| Pot Cap-1 Maneuver   | 249    | 461    | 910    |
| Stage 1              | 512    | -      | -      |
| Stage 2              | 683    | -      | -      |
| Platoon blocked, %   |        |        |        |
| Mov Cap-1 Maneuver   | 230    | 461    | 910    |
| Mov Cap-2 Maneuver   | 230    | -      | -      |
| Stage 1              | 512    | -      | -      |
| Stage 2              | 631    | -      | -      |

| Approach             | EB   | NB  | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 19.1 | 1.1 | 0  |
| HCM LOS              | C    |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 910   | -   | 375   | -   | -   |
| HCM Lane V/C Ratio    | 0.055 | -   | 0.32  | -   | -   |
| HCM Control Delay (s) | 9.2   | 0.3 | 19.1  | -   | -   |
| HCM Lane LOS          | A     | A   | C     | -   | -   |
| HCM 95th %tile Q(veh) | 0.2   | -   | 1.4   | -   | -   |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike Interchange Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |       |      |       |       |      |       |       |      |       |       |      |
|-------------------------|------------------------------------------------------------------------------------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|
| Lane Group              | EBL                                                                                | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
| Lane Configurations     |                                                                                    | ↕     |      |       | ↕     |      |       | ↕     |      |       | ↕     |      |
| Traffic Volume (vph)    | 11                                                                                 | 1     | 3    | 204   | 0     | 167  | 2     | 680   | 26   | 65    | 643   | 4    |
| Future Volume (vph)     | 11                                                                                 | 1     | 3    | 204   | 0     | 167  | 2     | 680   | 26   | 65    | 643   | 4    |
| Ideal Flow (vphpl)      | 1900                                                                               | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12                                                                                 | 16    | 12   | 12    | 16    | 12   | 12    | 13    | 12   | 12    | 13    | 12   |
| Lane Util. Factor       | 1.00                                                                               | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 |
| Frt                     |                                                                                    | 0.972 |      |       | 0.939 |      |       | 0.995 |      |       | 0.999 |      |
| Flt Protected           |                                                                                    | 0.964 |      |       | 0.973 |      |       |       |      |       | 0.995 |      |
| Satd. Flow (prot)       | 0                                                                                  | 1959  | 0    | 0     | 1910  | 0    | 0     | 1897  | 0    | 0     | 1895  | 0    |
| Flt Permitted           |                                                                                    | 0.784 |      |       | 0.818 |      |       | 0.999 |      |       | 0.887 |      |
| Satd. Flow (perm)       | 0                                                                                  | 1593  | 0    | 0     | 1606  | 0    | 0     | 1895  | 0    | 0     | 1689  | 0    |
| Right Turn on Red       |                                                                                    |       | Yes  |       |       | Yes  |       |       | Yes  |       |       | Yes  |
| Satd. Flow (RTOR)       |                                                                                    | 4     |      |       | 59    |      |       | 5     |      |       | 1     |      |
| Link Speed (mph)        |                                                                                    | 25    |      |       | 30    |      |       | 35    |      |       | 35    |      |
| Link Distance (ft)      |                                                                                    | 378   |      |       | 442   |      |       | 1898  |      |       | 522   |      |
| Travel Time (s)         |                                                                                    | 10.3  |      |       | 10.0  |      |       | 37.0  |      |       | 10.2  |      |
| Peak Hour Factor        | 0.80                                                                               | 0.80  | 0.80 | 0.84  | 0.84  | 0.84 | 0.94  | 0.94  | 0.94 | 0.91  | 0.91  | 0.91 |
| Heavy Vehicles (%)      | 3%                                                                                 | 3%    | 3%   | 3%    | 3%    | 3%   | 3%    | 3%    | 3%   | 3%    | 3%    | 3%   |
| Adj. Flow (vph)         | 14                                                                                 | 1     | 4    | 243   | 0     | 199  | 2     | 723   | 28   | 71    | 707   | 4    |
| Shared Lane Traffic (%) |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 0                                                                                  | 19    | 0    | 0     | 442   | 0    | 0     | 753   | 0    | 0     | 782   | 0    |
| Turn Type               | Perm                                                                               | NA    |      | Perm  | NA    |      | Perm  | NA    |      | Perm  | NA    |      |
| Protected Phases        |                                                                                    | 4     |      |       | 8     |      |       | 2     |      |       | 6     |      |
| Permitted Phases        | 4                                                                                  |       |      | 8     |       |      | 2     |       |      | 6     |       |      |
| Detector Phase          | 4                                                                                  | 4     |      | 8     | 8     |      | 2     | 2     |      | 6     | 6     |      |
| Switch Phase            |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Minimum Initial (s)     | 7.0                                                                                | 7.0   |      | 7.0   | 7.0   |      | 15.0  | 15.0  |      | 15.0  | 15.0  |      |
| Minimum Split (s)       | 11.7                                                                               | 11.7  |      | 11.7  | 11.7  |      | 20.6  | 20.6  |      | 20.6  | 20.6  |      |
| Total Split (s)         | 25.0                                                                               | 25.0  |      | 25.0  | 25.0  |      | 45.0  | 45.0  |      | 45.0  | 45.0  |      |
| Total Split (%)         | 35.7%                                                                              | 35.7% |      | 35.7% | 35.7% |      | 64.3% | 64.3% |      | 64.3% | 64.3% |      |
| Yellow Time (s)         | 3.3                                                                                | 3.3   |      | 3.3   | 3.3   |      | 4.0   | 4.0   |      | 4.0   | 4.0   |      |
| All-Red Time (s)        | 1.4                                                                                | 1.4   |      | 1.4   | 1.4   |      | 1.6   | 1.6   |      | 1.6   | 1.6   |      |
| Lost Time Adjust (s)    |                                                                                    | 0.0   |      |       | 0.0   |      |       | 0.0   |      |       | 0.0   |      |
| Total Lost Time (s)     |                                                                                    | 4.7   |      |       | 4.7   |      |       | 5.6   |      |       | 5.6   |      |
| Lead/Lag                |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Lead-Lag Optimize?      |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Recall Mode             | None                                                                               | None  |      | None  | None  |      | C-Min | C-Min |      | C-Min | C-Min |      |
| Act Effect Green (s)    |                                                                                    | 19.3  |      |       | 19.3  |      |       | 40.4  |      |       | 40.4  |      |
| Actuated g/C Ratio      |                                                                                    | 0.28  |      |       | 0.28  |      |       | 0.58  |      |       | 0.58  |      |
| v/c Ratio               |                                                                                    | 0.04  |      |       | 0.91  |      |       | 0.69  |      |       | 0.80  |      |
| Control Delay           |                                                                                    | 15.9  |      |       | 46.7  |      |       | 7.0   |      |       | 20.6  |      |
| Queue Delay             |                                                                                    | 0.0   |      |       | 0.0   |      |       | 0.0   |      |       | 0.0   |      |
| Total Delay             |                                                                                    | 15.9  |      |       | 46.7  |      |       | 7.0   |      |       | 20.6  |      |
| LOS                     |                                                                                    | B     |      |       | D     |      |       | A     |      |       | C     |      |
| Approach Delay          |                                                                                    | 15.9  |      |       | 46.7  |      |       | 7.0   |      |       | 20.6  |      |
| Approach LOS            |                                                                                    | B     |      |       | D     |      |       | A     |      |       | C     |      |
| Queue Length 50th (ft)  |                                                                                    | 5     |      |       | 155   |      |       | 47    |      |       | 254   |      |
| Queue Length 95th (ft)  |                                                                                    | 16    |      |       | #281  |      |       | 79    |      |       | #483  |      |
| Internal Link Dist (ft) |                                                                                    | 298   |      |       | 362   |      |       | 1818  |      |       | 442   |      |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

Timing Plan: Weekday AM Peak

|                        | EBL | EBT  | EBR | WBL | WBT  | WBR | NBL | NBT  | NBR | SBL | SBT  | SBR |
|------------------------|-----|------|-----|-----|------|-----|-----|------|-----|-----|------|-----|
| Turn Bay Length (ft)   |     |      |     |     |      |     |     |      |     |     |      |     |
| Base Capacity (vph)    |     | 466  |     |     | 509  |     |     | 1097 |     |     | 976  |     |
| Starvation Cap Reductn |     | 0    |     |     | 0    |     |     | 0    |     |     | 0    |     |
| Spillback Cap Reductn  |     | 0    |     |     | 0    |     |     | 0    |     |     | 0    |     |
| Storage Cap Reductn    |     | 0    |     |     | 0    |     |     | 0    |     |     | 0    |     |
| Reduced v/c Ratio      |     | 0.04 |     |     | 0.87 |     |     | 0.69 |     |     | 0.80 |     |

## Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 11 (16%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 21.2

Intersection LOS: C

Intersection Capacity Utilization 110.9%

ICU Level of Service H

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

|                                                                                                   |                                                                                                    |                                                                                                 |                                                                                                  |
|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
|  Ø2 (R)<br>45 s |  Ø6 (R)<br>45 s |  Ø4<br>25 s |  Ø8<br>25 s |
|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive Background Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |      |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3   |
| Lane Configurations     |  |  |  |  |  |  |      |
| Traffic Volume (vph)    | 54                                                                                | 136                                                                               | 366                                                                               | 739                                                                               | 622                                                                               | 198                                                                               |      |
| Future Volume (vph)     | 54                                                                                | 136                                                                               | 366                                                                               | 739                                                                               | 622                                                                               | 198                                                                               |      |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |      |
| Lane Width (ft)         | 10                                                                                | 10                                                                                | 11                                                                                | 11                                                                                | 12                                                                                | 12                                                                                |      |
| Storage Length (ft)     | 0                                                                                 | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   | 0                                                                                 |      |
| Storage Lanes           | 1                                                                                 | 1                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |      |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              |      |
| Frt                     |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.964                                                                             |                                                                                   |      |
| Flt Protected           | 0.950                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |      |
| Satd. Flow (prot)       | 1636                                                                              | 1463                                                                              | 1694                                                                              | 1783                                                                              | 3379                                                                              | 0                                                                                 |      |
| Flt Permitted           | 0.950                                                                             |                                                                                   | 0.164                                                                             |                                                                                   |                                                                                   |                                                                                   |      |
| Satd. Flow (perm)       | 1636                                                                              | 1463                                                                              | 292                                                                               | 1783                                                                              | 3379                                                                              | 0                                                                                 |      |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |      |
| Satd. Flow (RTOR)       |                                                                                   | 164                                                                               |                                                                                   |                                                                                   | 58                                                                                |                                                                                   |      |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 35                                                                                |                                                                                   |      |
| Link Distance (ft)      | 445                                                                               |                                                                                   |                                                                                   | 510                                                                               | 341                                                                               |                                                                                   |      |
| Travel Time (s)         | 12.1                                                                              |                                                                                   |                                                                                   | 11.6                                                                              | 6.6                                                                               |                                                                                   |      |
| Peak Hour Factor        | 0.83                                                                              | 0.83                                                                              | 0.91                                                                              | 0.91                                                                              | 0.94                                                                              | 0.94                                                                              |      |
| Heavy Vehicles (%)      | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                |      |
| Adj. Flow (vph)         | 65                                                                                | 164                                                                               | 402                                                                               | 812                                                                               | 662                                                                               | 211                                                                               |      |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Group Flow (vph)   | 65                                                                                | 164                                                                               | 402                                                                               | 812                                                                               | 873                                                                               | 0                                                                                 |      |
| Turn Type               | Prot                                                                              | Perm                                                                              | pm+pt                                                                             | NA                                                                                | NA                                                                                |                                                                                   |      |
| Protected Phases        | 4                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 | 2                                                                                 |                                                                                   | 3    |
| Permitted Phases        |                                                                                   | 4                                                                                 | 6                                                                                 |                                                                                   |                                                                                   |                                                                                   |      |
| Detector Phase          | 4                                                                                 | 4                                                                                 | 1                                                                                 | 6                                                                                 | 2                                                                                 |                                                                                   |      |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               | 5.0                                                                               | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0  |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              | 9.2                                                                               | 21.9                                                                              | 21.9                                                                              |                                                                                   | 22.0 |
| Total Split (s)         | 13.0                                                                              | 13.0                                                                              | 11.0                                                                              | 35.0                                                                              | 24.0                                                                              |                                                                                   | 22.0 |
| Total Split (%)         | 18.6%                                                                             | 18.6%                                                                             | 15.7%                                                                             | 50.0%                                                                             | 34.3%                                                                             |                                                                                   | 31%  |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               | 3.2                                                                               | 4.9                                                                               | 4.9                                                                               |                                                                                   | 4.0  |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 2.0                                                                               | 2.0                                                                               |                                                                                   | 0.0  |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               | 4.2                                                                               | 6.9                                                                               | 6.9                                                                               |                                                                                   |      |
| Lead/Lag                | Lag                                                                               | Lag                                                                               | Lead                                                                              |                                                                                   | Lag                                                                               |                                                                                   | Lead |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               |                                                                                   | Yes  |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                             | C-Max                                                                             |                                                                                   | None |
| Act Effect Green (s)    | 9.3                                                                               | 9.3                                                                               | 52.5                                                                              | 49.8                                                                              | 22.8                                                                              |                                                                                   |      |
| Actuated g/C Ratio      | 0.13                                                                              | 0.13                                                                              | 0.75                                                                              | 0.71                                                                              | 0.33                                                                              |                                                                                   |      |
| v/c Ratio               | 0.30                                                                              | 0.49                                                                              | 0.60                                                                              | 0.64                                                                              | 0.77                                                                              |                                                                                   |      |
| Control Delay           | 31.1                                                                              | 10.5                                                                              | 8.3                                                                               | 8.5                                                                               | 18.7                                                                              |                                                                                   |      |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Total Delay             | 31.1                                                                              | 10.5                                                                              | 8.3                                                                               | 8.5                                                                               | 18.7                                                                              |                                                                                   |      |
| LOS                     | C                                                                                 | B                                                                                 | A                                                                                 | A                                                                                 | B                                                                                 |                                                                                   |      |
| Approach Delay          | 16.4                                                                              |                                                                                   |                                                                                   | 8.4                                                                               | 18.7                                                                              |                                                                                   |      |
| Approach LOS            | B                                                                                 |                                                                                   |                                                                                   | A                                                                                 | B                                                                                 |                                                                                   |      |



# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive Background Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |    |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3 |
| Queue Length 50th (ft)  | 26                                                                                | 0                                                                                 | 10                                                                                | 132                                                                               | 115                                                                               |                                                                                   |    |
| Queue Length 95th (ft)  | 54                                                                                | 38                                                                                | 99                                                                                | 431                                                                               | m188                                                                              |                                                                                   |    |
| Internal Link Dist (ft) | 365                                                                               |                                                                                   |                                                                                   | 430                                                                               | 261                                                                               |                                                                                   |    |
| Turn Bay Length (ft)    |                                                                                   | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   |                                                                                   |    |
| Base Capacity (vph)     | 218                                                                               | 337                                                                               | 674                                                                               | 1267                                                                              | 1140                                                                              |                                                                                   |    |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Reduced v/c Ratio       | 0.30                                                                              | 0.49                                                                              | 0.60                                                                              | 0.64                                                                              | 0.77                                                                              |                                                                                   |    |

## Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 48 (69%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 13.1

Intersection LOS: B

Intersection Capacity Utilization 63.9%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

|                                                                                            |                                                                                            |                                                                                        |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø3 |  Ø4 |
| 11 s                                                                                       | 24 s                                                                                       | 22 s                                                                                   | 13 s                                                                                     |
|  Ø6 (R) |                                                                                            |                                                                                        |                                                                                          |
| 35 s                                                                                       |                                                                                            |                                                                                        |                                                                                          |

# 103: Route 58 (Black Rock Turnpike) & Brookside Drive 2040 Background Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

| Lane Group              | EBL   | EBR  | NBL   | NBT   | SBT   | SBR  |
|-------------------------|-------|------|-------|-------|-------|------|
| Lane Configurations     |       |      |       |       |       |      |
| Traffic Volume (vph)    | 61    | 15   | 59    | 1051  | 586   | 181  |
| Future Volume (vph)     | 61    | 15   | 59    | 1051  | 586   | 181  |
| Ideal Flow (vphpl)      | 1900  | 1900 | 1900  | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 16    | 12   | 12    | 12    | 12    | 12   |
| Lane Util. Factor       | 1.00  | 1.00 | 0.95  | 0.95  | 0.95  | 0.95 |
| Frt                     | 0.973 |      |       |       | 0.965 |      |
| Flt Protected           | 0.962 |      |       | 0.997 |       |      |
| Satd. Flow (prot)       | 1957  | 0    | 0     | 3494  | 3382  | 0    |
| Flt Permitted           | 0.962 |      |       | 0.853 |       |      |
| Satd. Flow (perm)       | 1957  | 0    | 0     | 2990  | 3382  | 0    |
| Right Turn on Red       |       | Yes  |       |       |       | Yes  |
| Satd. Flow (RTOR)       | 15    |      |       |       | 104   |      |
| Link Speed (mph)        | 25    |      |       | 30    | 30    |      |
| Link Distance (ft)      | 347   |      |       | 293   | 336   |      |
| Travel Time (s)         | 9.5   |      |       | 6.7   | 7.6   |      |
| Peak Hour Factor        | 0.80  | 0.80 | 0.90  | 0.90  | 0.88  | 0.88 |
| Heavy Vehicles (%)      | 3%    | 3%   | 3%    | 3%    | 3%    | 3%   |
| Adj. Flow (vph)         | 76    | 19   | 66    | 1168  | 666   | 206  |
| Shared Lane Traffic (%) |       |      |       |       |       |      |
| Lane Group Flow (vph)   | 95    | 0    | 0     | 1234  | 872   | 0    |
| Turn Type               | Prot  |      | pm+pt | NA    | NA    |      |
| Protected Phases        | 4     |      | 5     | 2     | 6     |      |
| Permitted Phases        |       |      | 2     |       |       |      |
| Detector Phase          | 4     |      | 5     | 2     | 6     |      |
| Switch Phase            |       |      |       |       |       |      |
| Minimum Initial (s)     | 9.0   |      | 3.0   | 15.0  | 15.0  |      |
| Minimum Split (s)       | 13.0  |      | 8.9   | 20.4  | 20.4  |      |
| Total Split (s)         | 14.0  |      | 8.9   | 56.0  | 47.1  |      |
| Total Split (%)         | 20.0% |      | 12.7% | 80.0% | 67.3% |      |
| Yellow Time (s)         | 3.0   |      | 4.2   | 4.2   | 4.2   |      |
| All-Red Time (s)        | 1.0   |      | 1.7   | 1.2   | 1.2   |      |
| Lost Time Adjust (s)    | 0.0   |      |       | 0.0   | 0.0   |      |
| Total Lost Time (s)     | 4.0   |      |       | 5.4   | 5.4   |      |
| Lead/Lag                |       |      | Lag   |       | Lead  |      |
| Lead-Lag Optimize?      |       |      | Yes   |       | Yes   |      |
| Recall Mode             | None  |      | None  | C-Max | C-Max |      |
| Act Effect Green (s)    | 9.2   |      |       | 55.1  | 55.1  |      |
| Actuated g/C Ratio      | 0.13  |      |       | 0.79  | 0.79  |      |
| v/c Ratio               | 0.35  |      |       | 0.52  | 0.33  |      |
| Control Delay           | 27.8  |      |       | 3.0   | 1.0   |      |
| Queue Delay             | 0.0   |      |       | 0.0   | 0.0   |      |
| Total Delay             | 27.8  |      |       | 3.0   | 1.0   |      |
| LOS                     | C     |      |       | A     | A     |      |
| Approach Delay          | 27.8  |      |       | 3.0   | 1.0   |      |
| Approach LOS            | C     |      |       | A     | A     |      |
| Queue Length 50th (ft)  | 32    |      |       | 84    | 7     |      |
| Queue Length 95th (ft)  | 62    |      |       | 80    | 5     |      |
| Internal Link Dist (ft) | 267   |      |       | 213   | 256   |      |

# 103: Route 58 (Black Rock Turnpike) & Brookside Drive 2040 Background Optimized Conditions

Timing Plan: Weekday AM Peak

|                        |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Turn Bay Length (ft)   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Base Capacity (vph)    | 292                                                                               |                                                                                   |                                                                                   | 2353                                                                              | 2683                                                                              |                                                                                   |
| Starvation Cap Reductn | 0                                                                                 |                                                                                   |                                                                                   | 47                                                                                | 0                                                                                 |                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |
| Storage Cap Reductn    | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |
| Reduced v/c Ratio      | 0.33                                                                              |                                                                                   |                                                                                   | 0.54                                                                              | 0.33                                                                              |                                                                                   |

## Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 16 (23%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.52

Intersection Signal Delay: 3.3

Intersection LOS: A

Intersection Capacity Utilization 72.6%

ICU Level of Service C

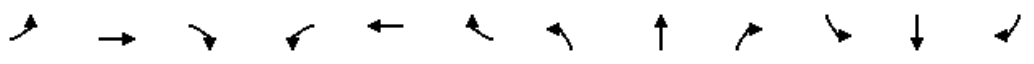
Analysis Period (min) 15

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive

|                                                                                           |                                                                                         |
|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|  Ø2 (R)  |  Ø4  |
| 56 s                                                                                      | 14 s                                                                                    |
|  Ø6 (R) |  Ø5 |
| 47.1 s                                                                                    | 8.9 s                                                                                   |

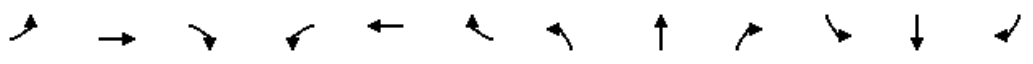
# 104: Route 58 (Black Rock Turnpike) & Commercial Drive at Blackfield Woods Road Conditions Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |       |       |       |       |       |       |       |      |       |       |      |
|-------------------------|------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|------|
| Lane Group              | EBL                                                                                | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
| Lane Configurations     |                                                                                    |       |       |       |       |       |       |       |      |       |       |      |
| Traffic Volume (vph)    | 5                                                                                  | 0     | 1     | 50    | 0     | 340   | 8     | 783   | 25   | 84    | 533   | 3    |
| Future Volume (vph)     | 5                                                                                  | 0     | 1     | 50    | 0     | 340   | 8     | 783   | 25   | 84    | 533   | 3    |
| Ideal Flow (vphpl)      | 1900                                                                               | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12                                                                                 | 12    | 12    | 12    | 12    | 11    | 12    | 11    | 12   | 12    | 11    | 12   |
| Storage Length (ft)     | 0                                                                                  |       | 0     | 0     |       | 75    | 0     |       | 0    | 0     |       | 0    |
| Storage Lanes           | 0                                                                                  |       | 1     | 0     |       | 1     | 0     |       | 0    | 0     |       | 0    |
| Taper Length (ft)       | 25                                                                                 |       |       | 25    |       |       | 25    |       |      | 25    |       |      |
| Lane Util. Factor       | 1.00                                                                               | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 0.95  | 0.95  | 0.95 | 0.95  | 0.95  | 0.95 |
| Frt                     |                                                                                    |       | 0.850 |       |       | 0.850 |       | 0.995 |      |       | 0.999 |      |
| Flt Protected           |                                                                                    | 0.950 |       |       | 0.950 |       |       |       |      |       | 0.993 |      |
| Satd. Flow (prot)       | 0                                                                                  | 1752  | 1568  | 0     | 1752  | 1516  | 0     | 3371  | 0    | 0     | 3361  | 0    |
| Flt Permitted           |                                                                                    | 0.720 |       |       | 0.754 |       |       | 0.949 |      |       | 0.725 |      |
| Satd. Flow (perm)       | 0                                                                                  | 1328  | 1568  | 0     | 1391  | 1516  | 0     | 3199  | 0    | 0     | 2454  | 0    |
| Right Turn on Red       |                                                                                    |       | Yes   |       |       | No    |       |       | Yes  |       |       | Yes  |
| Satd. Flow (RTOR)       |                                                                                    |       | 137   |       |       |       |       | 5     |      |       | 1     |      |
| Link Speed (mph)        |                                                                                    | 30    |       |       | 25    |       |       | 30    |      |       | 30    |      |
| Link Distance (ft)      |                                                                                    | 87    |       |       | 499   |       |       | 713   |      |       | 293   |      |
| Travel Time (s)         |                                                                                    | 2.0   |       |       | 13.6  |       |       | 16.2  |      |       | 6.7   |      |
| Peak Hour Factor        | 0.80                                                                               | 0.80  | 0.80  | 0.90  | 0.90  | 0.90  | 0.88  | 0.88  | 0.88 | 0.92  | 0.92  | 0.92 |
| Heavy Vehicles (%)      | 3%                                                                                 | 3%    | 3%    | 3%    | 3%    | 3%    | 3%    | 3%    | 3%   | 3%    | 3%    | 3%   |
| Adj. Flow (vph)         | 6                                                                                  | 0     | 1     | 56    | 0     | 378   | 9     | 890   | 28   | 91    | 579   | 3    |
| Shared Lane Traffic (%) |                                                                                    |       |       |       |       |       |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 0                                                                                  | 6     | 1     | 0     | 56    | 378   | 0     | 927   | 0    | 0     | 673   | 0    |
| Turn Type               | Perm                                                                               | NA    | Perm  | Perm  | NA    | Perm  | Perm  | NA    |      | pm+pt | NA    |      |
| Protected Phases        |                                                                                    | 4     |       |       | 8     |       |       | 2     |      | 1     | 6     |      |
| Permitted Phases        | 4                                                                                  |       | 4     | 8     |       | 8     | 2     |       |      | 6     |       |      |
| Detector Phase          | 4                                                                                  | 4     | 4     | 8     | 8     | 8     | 2     | 2     |      | 1     | 6     |      |
| Switch Phase            |                                                                                    |       |       |       |       |       |       |       |      |       |       |      |
| Minimum Initial (s)     | 9.0                                                                                | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 15.0  | 15.0  |      | 3.0   | 15.0  |      |
| Minimum Split (s)       | 13.0                                                                               | 13.0  | 13.0  | 13.0  | 13.0  | 13.0  | 20.3  | 20.3  |      | 9.5   | 20.3  |      |
| Total Split (s)         | 27.0                                                                               | 27.0  | 27.0  | 27.0  | 27.0  | 27.0  | 33.5  | 33.5  |      | 9.5   | 43.0  |      |
| Total Split (%)         | 38.6%                                                                              | 38.6% | 38.6% | 38.6% | 38.6% | 38.6% | 47.9% | 47.9% |      | 13.6% | 61.4% |      |
| Yellow Time (s)         | 3.0                                                                                | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 4.3   | 4.3   |      | 4.3   | 4.3   |      |
| All-Red Time (s)        | 1.0                                                                                | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |      | 2.2   | 1.0   |      |
| Lost Time Adjust (s)    |                                                                                    | 0.0   | 0.0   |       | 0.0   | 0.0   |       | 0.0   |      |       | 0.0   |      |
| Total Lost Time (s)     |                                                                                    | 4.0   | 4.0   |       | 4.0   | 4.0   |       | 5.3   |      |       | 5.3   |      |
| Lead/Lag                |                                                                                    |       |       |       |       |       | Lead  | Lead  |      | Lag   |       |      |
| Lead-Lag Optimize?      |                                                                                    |       |       |       |       |       | Yes   | Yes   |      | Yes   |       |      |
| Recall Mode             | None                                                                               | None  | None  | None  | None  | None  | C-Max | C-Max |      | None  | C-Max |      |
| Act Effect Green (s)    |                                                                                    | 20.3  | 20.3  |       | 20.3  | 20.3  |       | 40.4  |      |       | 40.4  |      |
| Actuated g/C Ratio      |                                                                                    | 0.29  | 0.29  |       | 0.29  | 0.29  |       | 0.58  |      |       | 0.58  |      |
| v/c Ratio               |                                                                                    | 0.02  | 0.00  |       | 0.14  | 0.86  |       | 0.50  |      |       | 0.48  |      |
| Control Delay           |                                                                                    | 16.2  | 0.0   |       | 18.0  | 43.4  |       | 10.5  |      |       | 3.6   |      |
| Queue Delay             |                                                                                    | 0.0   | 0.0   |       | 0.0   | 0.0   |       | 0.0   |      |       | 0.1   |      |
| Total Delay             |                                                                                    | 16.2  | 0.0   |       | 18.0  | 43.4  |       | 10.5  |      |       | 3.8   |      |
| LOS                     |                                                                                    | B     | A     |       | B     | D     |       | B     |      |       | A     |      |
| Approach Delay          |                                                                                    | 13.9  |       |       | 40.1  |       |       | 10.5  |      |       | 3.8   |      |
| Approach LOS            |                                                                                    | B     |       |       | D     |       |       | B     |      |       | A     |      |

# 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road Conditions Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |      |      |     |      |      |     |      |     |     |      |     |
|-------------------------|------------------------------------------------------------------------------------|------|------|-----|------|------|-----|------|-----|-----|------|-----|
| Lane Group              | EBL                                                                                | EBT  | EBR  | WBL | WBT  | WBR  | NBL | NBT  | NBR | SBL | SBT  | SBR |
| Queue Length 50th (ft)  |                                                                                    | 2    | 0    |     | 17   | 146  |     | 121  |     |     | 17   |     |
| Queue Length 95th (ft)  |                                                                                    | 8    | 0    |     | 41   | #272 |     | 167  |     |     | 20   |     |
| Internal Link Dist (ft) |                                                                                    | 7    |      |     | 419  |      |     | 633  |     |     | 213  |     |
| Turn Bay Length (ft)    |                                                                                    |      |      |     |      | 75   |     |      |     |     |      |     |
| Base Capacity (vph)     |                                                                                    | 436  | 607  |     | 457  | 498  |     | 1847 |     |     | 1416 |     |
| Starvation Cap Reductn  |                                                                                    | 0    | 0    |     | 0    | 0    |     | 0    |     |     | 140  |     |
| Spillback Cap Reductn   |                                                                                    | 0    | 0    |     | 0    | 0    |     | 0    |     |     | 0    |     |
| Storage Cap Reductn     |                                                                                    | 0    | 0    |     | 0    | 0    |     | 0    |     |     | 0    |     |
| Reduced v/c Ratio       |                                                                                    | 0.01 | 0.00 |     | 0.12 | 0.76 |     | 0.50 |     |     | 0.53 |     |

## Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 8 (11%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 14.6

Intersection LOS: B

Intersection Capacity Utilization 62.3%

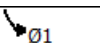
ICU Level of Service B

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

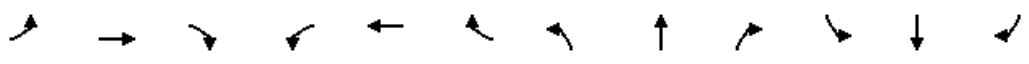
Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road

|                                                                                               |                                                                                              |                                                                                              |
|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| <br>33.5 s | <br>9.5 s | <br>27 s |
| <br>43 s   |                                                                                              | <br>27 s |



# 105: Route 135 (Stillson Road)/Stillson Road & Route 520 (Black Rock Turnpike) - Idealized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |                                                                                   |      |                                                                                   |                                                                                   |      |                                                                                     |                                                                                     |      |                                                                                     |                                                                                     |      |
|-------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
| Lane Group              | EBL                                                                                | EBT                                                                               | EBR  | WBL                                                                               | WBT                                                                               | WBR  | NBL                                                                                 | NBT                                                                                 | NBR  | SBL                                                                                 | SBT                                                                                 | SBR  |
| Lane Configurations     |   |  |      |  |  |      |  |  |      |  |  |      |
| Traffic Volume (vph)    | 48                                                                                 | 379                                                                               | 133  | 178                                                                               | 685                                                                               | 71   | 150                                                                                 | 165                                                                                 | 62   | 105                                                                                 | 351                                                                                 | 46   |
| Future Volume (vph)     | 48                                                                                 | 379                                                                               | 133  | 178                                                                               | 685                                                                               | 71   | 150                                                                                 | 165                                                                                 | 62   | 105                                                                                 | 351                                                                                 | 46   |
| Ideal Flow (vphpl)      | 1900                                                                               | 1900                                                                              | 1900 | 1900                                                                              | 1900                                                                              | 1900 | 1900                                                                                | 1900                                                                                | 1900 | 1900                                                                                | 1900                                                                                | 1900 |
| Lane Width (ft)         | 11                                                                                 | 11                                                                                | 12   | 11                                                                                | 12                                                                                | 12   | 11                                                                                  | 11                                                                                  | 12   | 12                                                                                  | 12                                                                                  | 12   |
| Storage Length (ft)     | 200                                                                                |                                                                                   | 0    | 175                                                                               |                                                                                   | 0    | 210                                                                                 |                                                                                     | 0    | 170                                                                                 |                                                                                     | 0    |
| Storage Lanes           | 1                                                                                  |                                                                                   | 0    | 1                                                                                 |                                                                                   | 0    | 1                                                                                   |                                                                                     | 0    | 1                                                                                   |                                                                                     | 0    |
| Taper Length (ft)       | 85                                                                                 |                                                                                   |      | 75                                                                                |                                                                                   |      | 100                                                                                 |                                                                                     |      | 100                                                                                 |                                                                                     |      |
| Lane Util. Factor       | 1.00                                                                               | 0.95                                                                              | 0.95 | 1.00                                                                              | 0.95                                                                              | 0.95 | 1.00                                                                                | 1.00                                                                                | 1.00 | 1.00                                                                                | 1.00                                                                                | 1.00 |
| Frt                     |                                                                                    | 0.961                                                                             |      |                                                                                   | 0.986                                                                             |      |                                                                                     | 0.959                                                                               |      |                                                                                     | 0.983                                                                               |      |
| Flt Protected           | 0.950                                                                              |                                                                                   |      | 0.950                                                                             |                                                                                   |      | 0.950                                                                               |                                                                                     |      | 0.950                                                                               |                                                                                     |      |
| Satd. Flow (prot)       | 1678                                                                               | 3225                                                                              | 0    | 1678                                                                              | 3423                                                                              | 0    | 1678                                                                                | 1694                                                                                | 0    | 1736                                                                                | 1796                                                                                | 0    |
| Flt Permitted           | 0.950                                                                              |                                                                                   |      | 0.950                                                                             |                                                                                   |      | 0.196                                                                               |                                                                                     |      | 0.517                                                                               |                                                                                     |      |
| Satd. Flow (perm)       | 1678                                                                               | 3225                                                                              | 0    | 1678                                                                              | 3423                                                                              | 0    | 346                                                                                 | 1694                                                                                | 0    | 945                                                                                 | 1796                                                                                | 0    |
| Right Turn on Red       |                                                                                    |                                                                                   | Yes  |                                                                                   |                                                                                   | Yes  |                                                                                     |                                                                                     | Yes  |                                                                                     |                                                                                     | No   |
| Satd. Flow (RTOR)       |                                                                                    | 29                                                                                |      |                                                                                   | 7                                                                                 |      |                                                                                     | 13                                                                                  |      |                                                                                     |                                                                                     |      |
| Link Speed (mph)        |                                                                                    | 30                                                                                |      |                                                                                   | 30                                                                                |      |                                                                                     | 30                                                                                  |      |                                                                                     | 25                                                                                  |      |
| Link Distance (ft)      |                                                                                    | 436                                                                               |      |                                                                                   | 368                                                                               |      |                                                                                     | 438                                                                                 |      |                                                                                     | 355                                                                                 |      |
| Travel Time (s)         |                                                                                    | 9.9                                                                               |      |                                                                                   | 8.4                                                                               |      |                                                                                     | 10.0                                                                                |      |                                                                                     | 9.7                                                                                 |      |
| Peak Hour Factor        | 0.88                                                                               | 0.88                                                                              | 0.88 | 0.86                                                                              | 0.86                                                                              | 0.86 | 0.80                                                                                | 0.80                                                                                | 0.80 | 0.81                                                                                | 0.81                                                                                | 0.81 |
| Heavy Vehicles (%)      | 4%                                                                                 | 4%                                                                                | 4%   | 4%                                                                                | 4%                                                                                | 4%   | 4%                                                                                  | 4%                                                                                  | 4%   | 4%                                                                                  | 4%                                                                                  | 4%   |
| Adj. Flow (vph)         | 55                                                                                 | 431                                                                               | 151  | 207                                                                               | 797                                                                               | 83   | 188                                                                                 | 206                                                                                 | 78   | 130                                                                                 | 433                                                                                 | 57   |
| Shared Lane Traffic (%) |                                                                                    |                                                                                   |      |                                                                                   |                                                                                   |      |                                                                                     |                                                                                     |      |                                                                                     |                                                                                     |      |
| Lane Group Flow (vph)   | 55                                                                                 | 582                                                                               | 0    | 207                                                                               | 880                                                                               | 0    | 188                                                                                 | 284                                                                                 | 0    | 130                                                                                 | 490                                                                                 | 0    |
| Turn Type               | Prot                                                                               | NA                                                                                |      | Prot                                                                              | NA                                                                                |      | pm+pt                                                                               | NA                                                                                  |      | pm+pt                                                                               | NA                                                                                  |      |
| Protected Phases        | 5                                                                                  | 2                                                                                 |      | 1                                                                                 | 6                                                                                 |      | 7                                                                                   | 4                                                                                   |      | 3                                                                                   | 8                                                                                   |      |
| Permitted Phases        |                                                                                    |                                                                                   |      |                                                                                   |                                                                                   |      | 4                                                                                   |                                                                                     |      | 8                                                                                   |                                                                                     |      |
| Detector Phase          | 5                                                                                  | 2                                                                                 |      | 1                                                                                 | 6                                                                                 |      | 7                                                                                   | 4                                                                                   |      | 3                                                                                   | 8                                                                                   |      |
| Switch Phase            |                                                                                    |                                                                                   |      |                                                                                   |                                                                                   |      |                                                                                     |                                                                                     |      |                                                                                     |                                                                                     |      |
| Minimum Initial (s)     | 5.0                                                                                | 15.0                                                                              |      | 5.0                                                                               | 15.0                                                                              |      | 5.0                                                                                 | 10.0                                                                                |      | 5.0                                                                                 | 10.0                                                                                |      |
| Minimum Split (s)       | 9.7                                                                                | 21.6                                                                              |      | 9.7                                                                               | 21.6                                                                              |      | 9.3                                                                                 | 16.8                                                                                |      | 9.3                                                                                 | 16.8                                                                                |      |
| Total Split (s)         | 10.2                                                                               | 30.6                                                                              |      | 22.0                                                                              | 42.4                                                                              |      | 15.4                                                                                | 45.1                                                                                |      | 14.3                                                                                | 44.0                                                                                |      |
| Total Split (%)         | 7.0%                                                                               | 21.1%                                                                             |      | 15.2%                                                                             | 29.2%                                                                             |      | 10.6%                                                                               | 31.1%                                                                               |      | 9.9%                                                                                | 30.3%                                                                               |      |
| Yellow Time (s)         | 3.0                                                                                | 4.1                                                                               |      | 3.0                                                                               | 4.1                                                                               |      | 3.3                                                                                 | 4.4                                                                                 |      | 3.3                                                                                 | 4.4                                                                                 |      |
| All-Red Time (s)        | 1.7                                                                                | 2.5                                                                               |      | 1.7                                                                               | 2.5                                                                               |      | 1.0                                                                                 | 2.4                                                                                 |      | 1.0                                                                                 | 2.4                                                                                 |      |
| Lost Time Adjust (s)    | 0.0                                                                                | 0.0                                                                               |      | 0.0                                                                               | 0.0                                                                               |      | 0.0                                                                                 | 0.0                                                                                 |      | 0.0                                                                                 | 0.0                                                                                 |      |
| Total Lost Time (s)     | 4.7                                                                                | 6.6                                                                               |      | 4.7                                                                               | 6.6                                                                               |      | 4.3                                                                                 | 6.8                                                                                 |      | 4.3                                                                                 | 6.8                                                                                 |      |
| Lead/Lag                | Lead                                                                               | Lag                                                                               |      | Lead                                                                              | Lag                                                                               |      | Lead                                                                                | Lag                                                                                 |      | Lead                                                                                | Lag                                                                                 |      |
| Lead-Lag Optimize?      | Yes                                                                                | Yes                                                                               |      | Yes                                                                               | Yes                                                                               |      | Yes                                                                                 | Yes                                                                                 |      | Yes                                                                                 | Yes                                                                                 |      |
| Recall Mode             | None                                                                               | Min                                                                               |      | None                                                                              | Min                                                                               |      | None                                                                                | None                                                                                |      | None                                                                                | None                                                                                |      |
| Act Effect Green (s)    | 5.5                                                                                | 24.0                                                                              |      | 17.3                                                                              | 35.8                                                                              |      | 53.1                                                                                | 39.6                                                                                |      | 48.4                                                                                | 37.2                                                                                |      |
| Actuated g/C Ratio      | 0.05                                                                               | 0.21                                                                              |      | 0.15                                                                              | 0.32                                                                              |      | 0.47                                                                                | 0.35                                                                                |      | 0.43                                                                                | 0.33                                                                                |      |
| v/c Ratio               | 0.67                                                                               | 0.82                                                                              |      | 0.80                                                                              | 0.80                                                                              |      | 0.64                                                                                | 0.47                                                                                |      | 0.28                                                                                | 0.82                                                                                |      |
| Control Delay           | 89.4                                                                               | 50.2                                                                              |      | 68.8                                                                              | 41.2                                                                              |      | 27.0                                                                                | 30.1                                                                                |      | 17.5                                                                                | 47.4                                                                                |      |
| Queue Delay             | 0.0                                                                                | 0.0                                                                               |      | 0.0                                                                               | 0.0                                                                               |      | 0.0                                                                                 | 0.0                                                                                 |      | 0.0                                                                                 | 0.0                                                                                 |      |
| Total Delay             | 89.4                                                                               | 50.2                                                                              |      | 68.8                                                                              | 41.2                                                                              |      | 27.0                                                                                | 30.1                                                                                |      | 17.5                                                                                | 47.4                                                                                |      |
| LOS                     | F                                                                                  | D                                                                                 |      | E                                                                                 | D                                                                                 |      | C                                                                                   | C                                                                                   |      | B                                                                                   | D                                                                                   |      |
| Approach Delay          |                                                                                    | 53.6                                                                              |      |                                                                                   | 46.4                                                                              |      |                                                                                     | 28.9                                                                                |      |                                                                                     | 41.1                                                                                |      |
| Approach LOS            |                                                                                    | D                                                                                 |      |                                                                                   | D                                                                                 |      |                                                                                     | C                                                                                   |      |                                                                                     | D                                                                                   |      |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 520 (Black Rock Turnpike) - Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

| Lane Group              | Ø9   |
|-------------------------|------|
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Heavy Vehicles (%)      |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 33.0 |
| Total Split (s)         | 33.0 |
| Total Split (%)         | 23%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)

Timing Plan: Weekday AM Peak

|                         | EBL  | EBT  | EBR | WBL  | WBT  | WBR | NBL  | NBT  | NBR | SBL  | SBT  | SBR |
|-------------------------|------|------|-----|------|------|-----|------|------|-----|------|------|-----|
| Queue Length 50th (ft)  | 40   | 201  |     | 146  | 301  |     | 75   | 151  |     | 50   | 322  |     |
| Queue Length 95th (ft)  | #102 | 261  |     | #245 | 357  |     | 106  | 201  |     | 76   | 393  |     |
| Internal Link Dist (ft) |      | 356  |     |      | 288  |     |      | 358  |     |      | 275  |     |
| Turn Bay Length (ft)    | 200  |      |     | 175  |      |     | 210  |      |     | 170  |      |     |
| Base Capacity (vph)     | 82   | 713  |     | 259  | 1098 |     | 296  | 606  |     | 489  | 596  |     |
| Starvation Cap Reductn  | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     |
| Spillback Cap Reductn   | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     |
| Storage Cap Reductn     | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     |
| Reduced v/c Ratio       | 0.67 | 0.82 |     | 0.80 | 0.80 |     | 0.64 | 0.47 |     | 0.27 | 0.82 |     |

## Intersection Summary

Area Type: Other

Cycle Length: 145

Actuated Cycle Length: 112

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 44.0

Intersection LOS: D

Intersection Capacity Utilization 73.6%

ICU Level of Service D

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)

|        |        |      |        |        |
|--------|--------|------|--------|--------|
| Ø1     | Ø2     | Ø9   | Ø3     | Ø4     |
| 22 s   | 30.6 s | 33 s | 14.3 s | 45.1 s |
| Ø5     | Ø6     |      | Ø7     | Ø8     |
| 10.2 s | 42.4 s |      | 15.4 s | 44 s   |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø9 |
| Queue Length 50th (ft)  |    |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway/Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |  |
| Traffic Volume (vph)    | 24                                                                                | 471                                                                               | 8                                                                                 | 25                                                                                | 892                                                                               | 42                                                                                | 51                                                                                 | 5                                                                                   | 20                                                                                  | 29                                                                                  | 1                                                                                   | 11                                                                                  |
| Future Volume (vph)     | 24                                                                                | 471                                                                               | 8                                                                                 | 25                                                                                | 892                                                                               | 42                                                                                | 51                                                                                 | 5                                                                                   | 20                                                                                  | 29                                                                                  | 1                                                                                   | 11                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                 | 13                                                                                  | 13                                                                                  | 12                                                                                  | 13                                                                                  | 13                                                                                  |
| Storage Length (ft)     | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 25                                                                                  | 0                                                                                   |                                                                                     | 25                                                                                  |
| Storage Lanes           | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 1                                                                                   | 0                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)       | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   | 0.993                                                                             |                                                                                   |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected           |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   | 0.999                                                                             |                                                                                   |                                                                                    | 0.956                                                                               |                                                                                     |                                                                                     | 0.954                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3342                                                                              | 0                                                                                 | 0                                                                                 | 3329                                                                              | 0                                                                                 | 0                                                                                  | 1805                                                                                | 1605                                                                                | 0                                                                                   | 1801                                                                                | 1605                                                                                |
| Flt Permitted           |                                                                                   | 0.886                                                                             |                                                                                   |                                                                                   | 0.928                                                                             |                                                                                   |                                                                                    | 0.720                                                                               |                                                                                     |                                                                                     | 0.681                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 2967                                                                              | 0                                                                                 | 0                                                                                 | 3092                                                                              | 0                                                                                 | 0                                                                                  | 1359                                                                                | 1605                                                                                | 0                                                                                   | 1286                                                                                | 1605                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 3                                                                                 |                                                                                   |                                                                                   | 7                                                                                 |                                                                                   |                                                                                    |                                                                                     | 168                                                                                 |                                                                                     |                                                                                     | 168                                                                                 |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 442                                                                               |                                                                                   |                                                                                   | 502                                                                               |                                                                                   |                                                                                    | 142                                                                                 |                                                                                     |                                                                                     | 135                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                    | 3.9                                                                                 |                                                                                     |                                                                                     | 3.7                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.80                                                                               | 0.80                                                                                | 0.80                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Heavy Vehicles (%)      | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                 | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  |
| Adj. Flow (vph)         | 30                                                                                | 589                                                                               | 10                                                                                | 28                                                                                | 1002                                                                              | 47                                                                                | 64                                                                                 | 6                                                                                   | 25                                                                                  | 32                                                                                  | 1                                                                                   | 12                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 629                                                                               | 0                                                                                 | 0                                                                                 | 1077                                                                              | 0                                                                                 | 0                                                                                  | 70                                                                                  | 25                                                                                  | 0                                                                                   | 33                                                                                  | 12                                                                                  |
| Turn Type               | pm+pt                                                                             | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  | Perm                                                                                | Perm                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases        | 1                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                  |                                                                                     | 4                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   |
| Detector Phase          | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                  | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0                                                                                | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |
| Minimum Split (s)       | 9.0                                                                               | 20.8                                                                              |                                                                                   | 20.8                                                                              | 20.8                                                                              |                                                                                   | 11.0                                                                               | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                |
| Total Split (s)         | 9.0                                                                               | 37.0                                                                              |                                                                                   | 28.0                                                                              | 28.0                                                                              |                                                                                   | 11.0                                                                               | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                |
| Total Split (%)         | 12.9%                                                                             | 52.9%                                                                             |                                                                                   | 40.0%                                                                             | 40.0%                                                                             |                                                                                   | 15.7%                                                                              | 15.7%                                                                               | 15.7%                                                                               | 15.7%                                                                               | 15.7%                                                                               | 15.7%                                                                               |
| Yellow Time (s)         | 3.0                                                                               | 4.3                                                                               |                                                                                   | 4.3                                                                               | 4.3                                                                               |                                                                                   | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| All-Red Time (s)        | 1.0                                                                               | 1.5                                                                               |                                                                                   | 1.5                                                                               | 1.5                                                                               |                                                                                   | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     |                                                                                   | 5.8                                                                               |                                                                                   |                                                                                   | 5.8                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 | 4.0                                                                                 |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |
| Lead/Lag                | Lead                                                                              |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               |                                                                                   | Lag                                                                                | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode             | Min                                                                               | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Act Effect Green (s)    |                                                                                   | 53.7                                                                              |                                                                                   |                                                                                   | 44.2                                                                              |                                                                                   |                                                                                    | 8.7                                                                                 | 8.7                                                                                 |                                                                                     | 8.7                                                                                 | 8.7                                                                                 |
| Actuated g/C Ratio      |                                                                                   | 0.77                                                                              |                                                                                   |                                                                                   | 0.63                                                                              |                                                                                   |                                                                                    | 0.12                                                                                | 0.12                                                                                |                                                                                     | 0.12                                                                                | 0.12                                                                                |
| v/c Ratio               |                                                                                   | 0.27                                                                              |                                                                                   |                                                                                   | 0.55                                                                              |                                                                                   |                                                                                    | 0.42                                                                                | 0.07                                                                                |                                                                                     | 0.21                                                                                | 0.03                                                                                |
| Control Delay           |                                                                                   | 3.3                                                                               |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   |                                                                                    | 35.4                                                                                | 0.4                                                                                 |                                                                                     | 29.8                                                                                | 0.2                                                                                 |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             |                                                                                   | 3.3                                                                               |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   |                                                                                    | 35.4                                                                                | 0.4                                                                                 |                                                                                     | 29.8                                                                                | 0.2                                                                                 |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | D                                                                                   | A                                                                                   |                                                                                     | C                                                                                   | A                                                                                   |
| Approach Delay          |                                                                                   | 3.3                                                                               |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   |                                                                                    | 26.2                                                                                |                                                                                     |                                                                                     | 21.9                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |



106: Turnpike Shopping Center Driveway/Fairway Plaza 2040 Black & Bond Road (Black Rock Turnpike)  
 Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

| Lane Group              | Ø3   |
|-------------------------|------|
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Heavy Vehicles (%)      |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 3    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 22.0 |
| Total Split (s)         | 22.0 |
| Total Split (%)         | 31%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                | Lead |
| Lead-Lag Optimize?      | Yes  |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  |                                                                                   | 33                                                                                |                                                                                   |                                                                                   | 18                                                                                |                                                                                   |                                                                                    | 29                                                                                  | 0                                                                                   |                                                                                     | 13                                                                                  | 0                                                                                   |
| Queue Length 95th (ft)  |                                                                                   | 53                                                                                |                                                                                   |                                                                                   | 21                                                                                |                                                                                   |                                                                                    | 54                                                                                  | 0                                                                                   |                                                                                     | 36                                                                                  | 0                                                                                   |
| Internal Link Dist (ft) |                                                                                   | 362                                                                               |                                                                                   |                                                                                   | 422                                                                               |                                                                                   |                                                                                    | 62                                                                                  |                                                                                     |                                                                                     | 55                                                                                  |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |
| Base Capacity (vph)     |                                                                                   | 2297                                                                              |                                                                                   |                                                                                   | 1955                                                                              |                                                                                   |                                                                                    | 168                                                                                 | 346                                                                                 |                                                                                     | 159                                                                                 | 346                                                                                 |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       |                                                                                   | 0.27                                                                              |                                                                                   |                                                                                   | 0.55                                                                              |                                                                                   |                                                                                    | 0.42                                                                                | 0.07                                                                                |                                                                                     | 0.21                                                                                | 0.03                                                                                |

## Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 15 (21%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 4.3

Intersection LOS: A

Intersection Capacity Utilization 62.0%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                            |                                                                                        |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø3 |  Ø4 |
| 9 s                                                                                        | 28 s                                                                                       | 22 s                                                                                   | 11 s                                                                                     |
|  Ø6 (R) |                                                                                            |                                                                                        |                                                                                          |
| 37 s                                                                                       |                                                                                            |                                                                                        |                                                                                          |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø3 |
| Queue Length 50th (ft)  |    |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |

# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) and Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |  |  |  |                                                                                     |
| Traffic Volume (vph)    | 1                                                                                 | 456                                                                               | 58                                                                                | 54                                                                                | 958                                                                               | 2                                                                                 | 76                                                                                 | 2                                                                                   | 31                                                                                  | 2                                                                                   | 2                                                                                   | 1                                                                                   |
| Future Volume (vph)     | 1                                                                                 | 456                                                                               | 58                                                                                | 54                                                                                | 958                                                                               | 2                                                                                 | 76                                                                                 | 2                                                                                   | 31                                                                                  | 2                                                                                   | 2                                                                                   | 1                                                                                   |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                 | 10                                                                                  | 10                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 250                                                                                 | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes           | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.983                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     | 0.962                                                                               |                                                                                     |
| Flt Protected           |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                    | 0.953                                                                               |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3298                                                                              | 0                                                                                 | 0                                                                                 | 3345                                                                              | 0                                                                                 | 0                                                                                  | 1625                                                                                | 1449                                                                                | 1736                                                                                | 1757                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.955                                                                             |                                                                                   |                                                                                   | 0.878                                                                             |                                                                                   |                                                                                    | 0.729                                                                               |                                                                                     | 0.702                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 3150                                                                              | 0                                                                                 | 0                                                                                 | 2946                                                                              | 0                                                                                 | 0                                                                                  | 1243                                                                                | 1449                                                                                | 1282                                                                                | 1757                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 42                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 118                                                                                 |                                                                                     | 1                                                                                   |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 502                                                                               |                                                                                   |                                                                                   | 407                                                                               |                                                                                   |                                                                                    | 423                                                                                 |                                                                                     |                                                                                     | 198                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                    | 11.5                                                                                |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                |
| Heavy Vehicles (%)      | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                 | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  |
| Adj. Flow (vph)         | 1                                                                                 | 570                                                                               | 73                                                                                | 59                                                                                | 1041                                                                              | 2                                                                                 | 83                                                                                 | 2                                                                                   | 34                                                                                  | 3                                                                                   | 3                                                                                   | 1                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 644                                                                               | 0                                                                                 | 0                                                                                 | 1102                                                                              | 0                                                                                 | 0                                                                                  | 85                                                                                  | 34                                                                                  | 3                                                                                   | 4                                                                                   | 0                                                                                   |
| Turn Type               | pm+pt                                                                             | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  | Perm                                                                                | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        | 1                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                  |                                                                                     | 4                                                                                   | 4                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                  | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 3.0                                                                               | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0                                                                                | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 7.3                                                                               | 21.3                                                                              |                                                                                   | 21.3                                                                              | 21.3                                                                              |                                                                                   | 11.9                                                                               | 11.9                                                                                | 11.9                                                                                | 11.9                                                                                | 11.9                                                                                |                                                                                     |
| Total Split (s)         | 7.3                                                                               | 52.9                                                                              |                                                                                   | 45.6                                                                              | 45.6                                                                              |                                                                                   | 17.1                                                                               | 17.1                                                                                | 17.1                                                                                | 17.1                                                                                | 17.1                                                                                |                                                                                     |
| Total Split (%)         | 10.4%                                                                             | 75.6%                                                                             |                                                                                   | 65.1%                                                                             | 65.1%                                                                             |                                                                                   | 24.4%                                                                              | 24.4%                                                                               | 24.4%                                                                               | 24.4%                                                                               | 24.4%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.3                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.0                                                                               | 1.3                                                                               |                                                                                   | 1.3                                                                               | 1.3                                                                               |                                                                                   | 1.9                                                                                | 1.9                                                                                 | 1.9                                                                                 | 1.9                                                                                 | 1.9                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 6.3                                                                               |                                                                                   |                                                                                   | 6.3                                                                               |                                                                                   |                                                                                    | 4.9                                                                                 | 4.9                                                                                 | 4.9                                                                                 | 4.9                                                                                 |                                                                                     |
| Lead/Lag                | Lead                                                                              |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | Max                                                                               | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 52.2                                                                              |                                                                                   |                                                                                   | 39.3                                                                              |                                                                                   |                                                                                    | 9.0                                                                                 | 9.0                                                                                 | 9.0                                                                                 | 9.0                                                                                 |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.75                                                                              |                                                                                   |                                                                                   | 0.56                                                                              |                                                                                   |                                                                                    | 0.13                                                                                | 0.13                                                                                | 0.13                                                                                | 0.13                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.27                                                                              |                                                                                   |                                                                                   | 0.67                                                                              |                                                                                   |                                                                                    | 0.53                                                                                | 0.12                                                                                | 0.02                                                                                | 0.02                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 3.3                                                                               |                                                                                   |                                                                                   | 4.3                                                                               |                                                                                   |                                                                                    | 40.6                                                                                | 0.8                                                                                 | 25.0                                                                                | 23.0                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 3.3                                                                               |                                                                                   |                                                                                   | 4.3                                                                               |                                                                                   |                                                                                    | 40.6                                                                                | 0.8                                                                                 | 25.0                                                                                | 23.0                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | D                                                                                   | A                                                                                   | C                                                                                   | C                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 3.3                                                                               |                                                                                   |                                                                                   | 4.3                                                                               |                                                                                   |                                                                                    | 29.2                                                                                |                                                                                     |                                                                                     | 23.9                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |

# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) and Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         | EBL | EBT  | EBR | WBL | WBT  | WBR | NBL | NBT  | NBR  | SBL  | SBT  | SBR |
|-------------------------|-----|------|-----|-----|------|-----|-----|------|------|------|------|-----|
| Queue Length 50th (ft)  |     | 34   |     |     | 34   |     |     | 35   | 0    | 1    | 1    |     |
| Queue Length 95th (ft)  |     | 51   |     |     | 31   |     |     | 73   | 0    | 7    | 8    |     |
| Internal Link Dist (ft) |     | 422  |     |     | 327  |     |     | 343  |      |      | 118  |     |
| Turn Bay Length (ft)    |     |      |     |     |      |     |     |      | 250  |      |      |     |
| Base Capacity (vph)     |     | 2373 |     |     | 1653 |     |     | 216  | 349  | 223  | 307  |     |
| Starvation Cap Reductn  |     | 0    |     |     | 7    |     |     | 0    | 0    | 0    | 0    |     |
| Spillback Cap Reductn   |     | 0    |     |     | 0    |     |     | 0    | 0    | 0    | 0    |     |
| Storage Cap Reductn     |     | 0    |     |     | 0    |     |     | 0    | 0    | 0    | 0    |     |
| Reduced v/c Ratio       |     | 0.27 |     |     | 0.67 |     |     | 0.39 | 0.10 | 0.01 | 0.01 |     |

## Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 4 (6%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 5.6

Intersection LOS: A

Intersection Capacity Utilization 68.2%

ICU Level of Service C

Analysis Period (min) 15

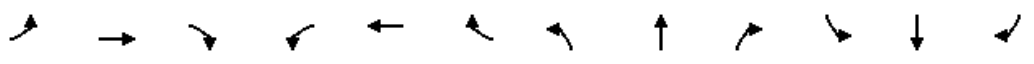
Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)

|        |        |        |
|--------|--------|--------|
| Ø1     | Ø2 (R) | Ø4     |
| 7.3 s  | 45.6 s | 17.1 s |
| Ø6 (R) |        |        |
| 52.9 s |        |        |



# 108: Burroughs Road & Route 58 (Black Rock Turnpike) 2040 Background Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |       |      |       |       |      |       |       |      |       |       |      |
|-------------------------|------------------------------------------------------------------------------------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|
| Lane Group              | EBL                                                                                | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
| Lane Configurations     |                                                                                    | ↔     |      |       | ↔     |      |       | ↔     |      |       | ↔     |      |
| Traffic Volume (vph)    | 29                                                                                 | 464   | 8    | 5     | 963   | 71   | 7     | 88    | 3    | 146   | 76    | 75   |
| Future Volume (vph)     | 29                                                                                 | 464   | 8    | 5     | 963   | 71   | 7     | 88    | 3    | 146   | 76    | 75   |
| Ideal Flow (vphpl)      | 1900                                                                               | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12                                                                                 | 11    | 12   | 12    | 11    | 12   | 12    | 16    | 12   | 12    | 16    | 12   |
| Lane Util. Factor       | 0.95                                                                               | 0.95  | 0.95 | 0.95  | 0.95  | 0.95 | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 |
| Frt                     |                                                                                    | 0.998 |      |       | 0.990 |      |       | 0.996 |      |       | 0.966 |      |
| Flt Protected           |                                                                                    | 0.997 |      |       |       |      |       | 0.996 |      |       | 0.976 |      |
| Satd. Flow (prot)       | 0                                                                                  | 3307  | 0    | 0     | 3290  | 0    | 0     | 2034  | 0    | 0     | 1934  | 0    |
| Flt Permitted           |                                                                                    | 0.849 |      |       | 0.953 |      |       | 0.970 |      |       | 0.810 |      |
| Satd. Flow (perm)       | 0                                                                                  | 2816  | 0    | 0     | 3136  | 0    | 0     | 1981  | 0    | 0     | 1605  | 0    |
| Right Turn on Red       |                                                                                    |       | Yes  |       |       | Yes  |       |       | Yes  |       |       | Yes  |
| Satd. Flow (RTOR)       |                                                                                    | 3     |      |       | 16    |      |       | 3     |      |       | 26    |      |
| Link Speed (mph)        |                                                                                    | 30    |      |       | 30    |      |       | 25    |      |       | 25    |      |
| Link Distance (ft)      |                                                                                    | 407   |      |       | 996   |      |       | 466   |      |       | 300   |      |
| Travel Time (s)         |                                                                                    | 9.3   |      |       | 22.6  |      |       | 12.7  |      |       | 8.2   |      |
| Peak Hour Factor        | 0.80                                                                               | 0.80  | 0.80 | 0.95  | 0.95  | 0.95 | 0.80  | 0.80  | 0.80 | 0.80  | 0.80  | 0.80 |
| Heavy Vehicles (%)      | 5%                                                                                 | 5%    | 5%   | 5%    | 5%    | 5%   | 5%    | 5%    | 5%   | 5%    | 5%    | 5%   |
| Adj. Flow (vph)         | 36                                                                                 | 580   | 10   | 5     | 1014  | 75   | 9     | 110   | 4    | 183   | 95    | 94   |
| Shared Lane Traffic (%) |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 0                                                                                  | 626   | 0    | 0     | 1094  | 0    | 0     | 123   | 0    | 0     | 372   | 0    |
| Turn Type               | Perm                                                                               | NA    |      | Perm  | NA    |      | Perm  | NA    |      | Perm  | NA    |      |
| Protected Phases        |                                                                                    | 6     |      |       | 2     |      |       | 4     |      |       | 8     |      |
| Permitted Phases        | 6                                                                                  |       |      | 2     |       |      | 4     |       |      | 8     |       |      |
| Detector Phase          | 6                                                                                  | 6     |      | 2     | 2     |      | 4     | 4     |      | 8     | 8     |      |
| Switch Phase            |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Minimum Initial (s)     | 15.0                                                                               | 15.0  |      | 15.0  | 15.0  |      | 9.0   | 9.0   |      | 9.0   | 9.0   |      |
| Minimum Split (s)       | 20.6                                                                               | 20.6  |      | 20.6  | 20.6  |      | 14.4  | 14.4  |      | 14.4  | 14.4  |      |
| Total Split (s)         | 41.0                                                                               | 41.0  |      | 41.0  | 41.0  |      | 29.0  | 29.0  |      | 29.0  | 29.0  |      |
| Total Split (%)         | 58.6%                                                                              | 58.6% |      | 58.6% | 58.6% |      | 41.4% | 41.4% |      | 41.4% | 41.4% |      |
| Yellow Time (s)         | 4.1                                                                                | 4.1   |      | 4.1   | 4.1   |      | 3.1   | 3.1   |      | 3.1   | 3.1   |      |
| All-Red Time (s)        | 1.5                                                                                | 1.5   |      | 1.5   | 1.5   |      | 2.3   | 2.3   |      | 2.3   | 2.3   |      |
| Lost Time Adjust (s)    |                                                                                    | 0.0   |      |       | 0.0   |      |       | 0.0   |      |       | 0.0   |      |
| Total Lost Time (s)     |                                                                                    | 5.6   |      |       | 5.6   |      |       | 5.4   |      |       | 5.4   |      |
| Lead/Lag                |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Lead-Lag Optimize?      |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Recall Mode             | C-Max                                                                              | C-Max |      | C-Max | C-Max |      | None  | None  |      | None  | None  |      |
| Act Effect Green (s)    |                                                                                    | 40.0  |      |       | 40.0  |      |       | 19.0  |      |       | 19.0  |      |
| Actuated g/C Ratio      |                                                                                    | 0.57  |      |       | 0.57  |      |       | 0.27  |      |       | 0.27  |      |
| v/c Ratio               |                                                                                    | 0.39  |      |       | 0.61  |      |       | 0.23  |      |       | 0.82  |      |
| Control Delay           |                                                                                    | 6.7   |      |       | 10.9  |      |       | 18.9  |      |       | 36.6  |      |
| Queue Delay             |                                                                                    | 0.0   |      |       | 0.0   |      |       | 0.0   |      |       | 0.0   |      |
| Total Delay             |                                                                                    | 6.7   |      |       | 10.9  |      |       | 18.9  |      |       | 36.6  |      |
| LOS                     |                                                                                    | A     |      |       | B     |      |       | B     |      |       | D     |      |
| Approach Delay          |                                                                                    | 6.7   |      |       | 10.9  |      |       | 18.9  |      |       | 36.6  |      |
| Approach LOS            |                                                                                    | A     |      |       | B     |      |       | B     |      |       | D     |      |
| Queue Length 50th (ft)  |                                                                                    | 37    |      |       | 104   |      |       | 39    |      |       | 137   |      |
| Queue Length 95th (ft)  |                                                                                    | 45    |      |       | 235   |      |       | 62    |      |       | 180   |      |
| Internal Link Dist (ft) |                                                                                    | 327   |      |       | 916   |      |       | 386   |      |       | 220   |      |

# 108: Burroughs Road & Route 58 (Black Rock Turnpike) 2040 Background Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Turn Bay Length (ft)   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)    |                                                                                   | 1608                                                                              |                                                                                   |                                                                                   | 1797                                                                              |                                                                                   |                                                                                    | 669                                                                                 |                                                                                     |                                                                                     | 558                                                                                 |                                                                                     |
| Starvation Cap Reductn |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   | 0.39                                                                              |                                                                                   |                                                                                   | 0.61                                                                              |                                                                                   |                                                                                    | 0.18                                                                                |                                                                                     |                                                                                     | 0.67                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 68 (97%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 14.5

Intersection LOS: B

Intersection Capacity Utilization 67.4%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)

|                                                                                           |                                                                                       |
|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  Ø2 (R)  |  Ø4  |
| 41 s                                                                                      | 29 s                                                                                  |
|  Ø6 (R) |  Ø8 |
| 41 s                                                                                      | 29 s                                                                                  |

# 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | EBR2                                                                              | WBL2                                                                              | WBL                                                                               | WBT                                                                                | WBR                                                                                 | NWL                                                                                 | NWR                                                                                 | NWR2                                                                                | NET                                                                                 |
| Lane Configurations     |                                                                                   |  |  |                                                                                   |                                                                                   |                                                                                   |  |                                                                                     |  |                                                                                     |                                                                                     |  |
| Traffic Volume (vph)    | 1                                                                                 | 243                                                                               | 371                                                                               | 1                                                                                 | 35                                                                                | 2                                                                                 | 585                                                                                | 1                                                                                   | 359                                                                                 | 5                                                                                   | 13                                                                                  | 1                                                                                   |
| Future Volume (vph)     | 1                                                                                 | 243                                                                               | 371                                                                               | 1                                                                                 | 35                                                                                | 2                                                                                 | 585                                                                                | 1                                                                                   | 359                                                                                 | 5                                                                                   | 13                                                                                  | 1                                                                                   |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 11                                                                                 | 12                                                                                  | 10                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                               | 0.95                                                                                | 0.97                                                                                | 0.95                                                                                | 0.95                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 0.993                                                                               |                                                                                     |                                                                                     | 0.910                                                                               |
| Flt Protected           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.997                                                                              |                                                                                     | 0.955                                                                               |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 1827                                                                              | 1553                                                                              | 0                                                                                 | 0                                                                                 | 0                                                                                 | 3345                                                                               | 0                                                                                   | 3137                                                                                | 0                                                                                   | 0                                                                                   | 1662                                                                                |
| Flt Permitted           |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.913                                                                              |                                                                                     | 0.955                                                                               |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 1823                                                                              | 1553                                                                              | 0                                                                                 | 0                                                                                 | 0                                                                                 | 3064                                                                               | 0                                                                                   | 3137                                                                                | 0                                                                                   | 0                                                                                   | 1662                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                    | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |
| Satd. Flow (RTOR)       |                                                                                   |                                                                                   | 72                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 193                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 30                                                                                 |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |
| Link Distance (ft)      |                                                                                   | 996                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 549                                                                                |                                                                                     | 218                                                                                 |                                                                                     |                                                                                     | 653                                                                                 |
| Travel Time (s)         |                                                                                   | 22.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 12.5                                                                               |                                                                                     | 5.0                                                                                 |                                                                                     |                                                                                     | 17.8                                                                                |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.81                                                                              | 0.81                                                                              | 0.81                                                                               | 0.81                                                                                | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                |
| Heavy Vehicles (%)      | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                 | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  |
| Adj. Flow (vph)         | 1                                                                                 | 304                                                                               | 464                                                                               | 1                                                                                 | 43                                                                                | 2                                                                                 | 722                                                                                | 1                                                                                   | 449                                                                                 | 6                                                                                   | 16                                                                                  | 1                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 305                                                                               | 465                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 768                                                                                | 0                                                                                   | 471                                                                                 | 0                                                                                   | 0                                                                                   | 3                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                | pm+ov                                                                             |                                                                                   | Perm                                                                              | Perm                                                                              | NA                                                                                 |                                                                                     | Prot                                                                                |                                                                                     |                                                                                     | NA                                                                                  |
| Protected Phases        |                                                                                   | 2                                                                                 | 4                                                                                 |                                                                                   |                                                                                   |                                                                                   | 2                                                                                  |                                                                                     | 4                                                                                   |                                                                                     |                                                                                     | 5                                                                                   |
| Permitted Phases        | 2                                                                                 |                                                                                   | 2                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector Phase          | 2                                                                                 | 2                                                                                 | 4                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 | 2                                                                                  |                                                                                     | 4                                                                                   |                                                                                     |                                                                                     | 5                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 15.0                                                                              | 15.0                                                                              | 9.0                                                                               |                                                                                   | 15.0                                                                              | 15.0                                                                              | 15.0                                                                               |                                                                                     | 9.0                                                                                 |                                                                                     |                                                                                     | 5.0                                                                                 |
| Minimum Split (s)       | 22.8                                                                              | 22.8                                                                              | 15.4                                                                              |                                                                                   | 22.8                                                                              | 22.8                                                                              | 22.8                                                                               |                                                                                     | 15.4                                                                                |                                                                                     |                                                                                     | 12.6                                                                                |
| Total Split (s)         | 37.2                                                                              | 37.2                                                                              | 20.2                                                                              |                                                                                   | 37.2                                                                              | 37.2                                                                              | 37.2                                                                               |                                                                                     | 20.2                                                                                |                                                                                     |                                                                                     | 12.6                                                                                |
| Total Split (%)         | 53.1%                                                                             | 53.1%                                                                             | 28.9%                                                                             |                                                                                   | 53.1%                                                                             | 53.1%                                                                             | 53.1%                                                                              |                                                                                     | 28.9%                                                                               |                                                                                     |                                                                                     | 18.0%                                                                               |
| Yellow Time (s)         | 4.1                                                                               | 4.1                                                                               | 3.3                                                                               |                                                                                   | 4.1                                                                               | 4.1                                                                               | 4.1                                                                                |                                                                                     | 3.3                                                                                 |                                                                                     |                                                                                     | 3.3                                                                                 |
| All-Red Time (s)        | 3.7                                                                               | 3.7                                                                               | 3.1                                                                               |                                                                                   | 3.7                                                                               | 3.7                                                                               | 3.7                                                                                |                                                                                     | 3.1                                                                                 |                                                                                     |                                                                                     | 4.3                                                                                 |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Total Lost Time (s)     |                                                                                   | 7.8                                                                               | 6.4                                                                               |                                                                                   |                                                                                   |                                                                                   | 7.8                                                                                |                                                                                     | 6.4                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | C-Min                                                                             | C-Min                                                                             | None                                                                              |                                                                                   | C-Min                                                                             | C-Min                                                                             | C-Min                                                                              |                                                                                     | None                                                                                |                                                                                     |                                                                                     | None                                                                                |
| Act Effect Green (s)    |                                                                                   | 39.5                                                                              | 62.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 39.5                                                                               |                                                                                     | 11.1                                                                                |                                                                                     |                                                                                     | 5.3                                                                                 |
| Actuated g/C Ratio      |                                                                                   | 0.56                                                                              | 0.89                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.56                                                                               |                                                                                     | 0.16                                                                                |                                                                                     |                                                                                     | 0.08                                                                                |
| v/c Ratio               |                                                                                   | 0.30                                                                              | 0.34                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.44                                                                               |                                                                                     | 0.72                                                                                |                                                                                     |                                                                                     | 0.02                                                                                |
| Control Delay           |                                                                                   | 7.9                                                                               | 2.7                                                                               |                                                                                   |                                                                                   |                                                                                   | 12.1                                                                               |                                                                                     | 22.5                                                                                |                                                                                     |                                                                                     | 30.5                                                                                |
| Queue Delay             |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Total Delay             |                                                                                   | 7.9                                                                               | 2.7                                                                               |                                                                                   |                                                                                   |                                                                                   | 12.1                                                                               |                                                                                     | 22.5                                                                                |                                                                                     |                                                                                     | 30.5                                                                                |
| LOS                     |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                  |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |
| Approach Delay          |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 12.1                                                                               |                                                                                     | 22.5                                                                                |                                                                                     |                                                                                     | 30.5                                                                                |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | B                                                                                  |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |
| Queue Length 50th (ft)  |                                                                                   | 31                                                                                | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 67                                                                                 |                                                                                     | 58                                                                                  |                                                                                     |                                                                                     | 1                                                                                   |
| Queue Length 95th (ft)  |                                                                                   | 134                                                                               | 125                                                                               |                                                                                   |                                                                                   |                                                                                   | 165                                                                                |                                                                                     | 77                                                                                  |                                                                                     |                                                                                     | 8                                                                                   |
| Internal Link Dist (ft) |                                                                                   | 916                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 469                                                                                |                                                                                     | 138                                                                                 |                                                                                     |                                                                                     | 573                                                                                 |

# 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |      |       |       |       |      |
|-------------------------|-----------------------------------------------------------------------------------|------|-------|-------|-------|------|
| Lane Group              | NER                                                                               | NER2 | SWL2  | SWL   | SWT   | SWR  |
| Lane Configurations     |  |      |       |       |       |      |
| Traffic Volume (vph)    | 1                                                                                 | 1    | 1     | 17    | 0     | 6    |
| Future Volume (vph)     | 1                                                                                 | 1    | 1     | 17    | 0     | 6    |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900 | 1900  | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12                                                                                | 12   | 12    | 15    | 12    | 12   |
| Lane Util. Factor       | 1.00                                                                              | 1.00 | 1.00  | 1.00  | 1.00  | 1.00 |
| Frt                     | 0.968                                                                             |      |       |       |       |      |
| Flt Protected           | 0.963                                                                             |      |       |       |       |      |
| Satd. Flow (prot)       | 0                                                                                 | 0    | 0     | 0     | 1703  | 0    |
| Flt Permitted           |                                                                                   |      |       |       |       |      |
| Satd. Flow (perm)       | 0                                                                                 | 0    | 0     | 0     | 1768  | 0    |
| Right Turn on Red       | No                                                                                |      |       |       |       |      |
| Satd. Flow (RTOR)       |                                                                                   |      |       |       |       |      |
| Link Speed (mph)        | 25                                                                                |      |       |       |       |      |
| Link Distance (ft)      | 695                                                                               |      |       |       |       |      |
| Travel Time (s)         | 19.0                                                                              |      |       |       |       |      |
| Peak Hour Factor        | 0.80                                                                              | 0.80 | 0.94  | 0.94  | 0.94  | 0.94 |
| Heavy Vehicles (%)      | 4%                                                                                | 4%   | 4%    | 4%    | 4%    | 4%   |
| Adj. Flow (vph)         | 1                                                                                 | 1    | 1     | 18    | 0     | 6    |
| Shared Lane Traffic (%) |                                                                                   |      |       |       |       |      |
| Lane Group Flow (vph)   | 0                                                                                 | 0    | 0     | 0     | 25    | 0    |
| Turn Type               |                                                                                   |      | Perm  | Perm  | NA    |      |
| Protected Phases        | 5                                                                                 |      |       |       |       |      |
| Permitted Phases        |                                                                                   |      | 5     | 5     |       |      |
| Detector Phase          |                                                                                   |      | 5     | 5     | 5     |      |
| Switch Phase            |                                                                                   |      |       |       |       |      |
| Minimum Initial (s)     |                                                                                   |      | 5.0   | 5.0   | 5.0   |      |
| Minimum Split (s)       |                                                                                   |      | 12.6  | 12.6  | 12.6  |      |
| Total Split (s)         |                                                                                   |      | 12.6  | 12.6  | 12.6  |      |
| Total Split (%)         |                                                                                   |      | 18.0% | 18.0% | 18.0% |      |
| Yellow Time (s)         |                                                                                   |      | 3.3   | 3.3   | 3.3   |      |
| All-Red Time (s)        |                                                                                   |      | 4.3   | 4.3   | 4.3   |      |
| Lost Time Adjust (s)    | 0.0                                                                               |      |       |       |       |      |
| Total Lost Time (s)     | 7.6                                                                               |      |       |       |       |      |
| Lead/Lag                |                                                                                   |      |       |       |       |      |
| Lead-Lag Optimize?      |                                                                                   |      |       |       |       |      |
| Recall Mode             |                                                                                   |      | None  | None  | None  |      |
| Act Effect Green (s)    | 5.3                                                                               |      |       |       |       |      |
| Actuated g/C Ratio      | 0.08                                                                              |      |       |       |       |      |
| v/c Ratio               | 0.19                                                                              |      |       |       |       |      |
| Control Delay           | 33.8                                                                              |      |       |       |       |      |
| Queue Delay             | 0.0                                                                               |      |       |       |       |      |
| Total Delay             | 33.8                                                                              |      |       |       |       |      |
| LOS                     | C                                                                                 |      |       |       |       |      |
| Approach Delay          | 33.8                                                                              |      |       |       |       |      |
| Approach LOS            | C                                                                                 |      |       |       |       |      |
| Queue Length 50th (ft)  | 10                                                                                |      |       |       |       |      |
| Queue Length 95th (ft)  | 33                                                                                |      |       |       |       |      |
| Internal Link Dist (ft) | 615                                                                               |      |       |       |       |      |

109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)

Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | EBR2                                                                              | WBL2                                                                              | WBL                                                                               | WBT                                                                                | WBR                                                                                 | NWL                                                                                 | NWR                                                                                 | NWR2                                                                                | NET                                                                                 |
| Turn Bay Length (ft)   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)    |                                                                                   | 1036                                                                              | 1370                                                                              |                                                                                   |                                                                                   |                                                                                   | 1741                                                                               |                                                                                     | 786                                                                                 |                                                                                     |                                                                                     | 125                                                                                 |
| Starvation Cap Reductn |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Reduced v/c Ratio      |                                                                                   | 0.29                                                                              | 0.34                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.44                                                                               |                                                                                     | 0.60                                                                                |                                                                                     |                                                                                     | 0.02                                                                                |

Intersection Summary

|                                                               |                        |
|---------------------------------------------------------------|------------------------|
| Area Type:                                                    | Other                  |
| Cycle Length: 70                                              |                        |
| Actuated Cycle Length: 70                                     |                        |
| Offset: 24 (34%), Referenced to phase 2:EBWB, Start of Yellow |                        |
| Natural Cycle: 60                                             |                        |
| Control Type: Actuated-Coordinated                            |                        |
| Maximum v/c Ratio: 0.72                                       |                        |
| Intersection Signal Delay: 12.0                               | Intersection LOS: B    |
| Intersection Capacity Utilization 73.6%                       | ICU Level of Service D |
| Analysis Period (min) 15                                      |                        |

Splits and Phases: 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)/Route 58 (Tunxis Hill Cut

|                                                                                          |                                                                                      |                                                                                        |
|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
|  Ø2 (R) |  Ø4 |  Ø5 |
| 37.2 s                                                                                   | 20.2 s                                                                               | 12.6 s                                                                                 |



109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)

Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                        |  |  |  |  |  |  |
| Lane Group             | NER                                                                               | NER2                                                                              | SWL2                                                                              | SWL                                                                               | SWT                                                                               | SWR                                                                               |
| Turn Bay Length (ft)   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Base Capacity (vph)    | 133                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Starvation Cap Reductn | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Storage Cap Reductn    | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Reduced v/c Ratio      | 0.19                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

201: Tunxis Hill Road & Route 58 (Tunxis Hill Cutoff) 2040 Background Optimized Conditions  
 Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         | →     | ↘    | ↙    | ←     | ↖    | ↗     |
|-------------------------|-------|------|------|-------|------|-------|
| Lane Group              | EBT   | EBR  | WBL  | WBT   | NBL  | NBR   |
| Lane Configurations     | ↑↑    |      |      | ↑     | ↖    | ↗     |
| Traffic Volume (vph)    | 271   | 2    | 64   | 633   | 0    | 61    |
| Future Volume (vph)     | 271   | 2    | 64   | 633   | 0    | 61    |
| Ideal Flow (vphpl)      | 1900  | 1900 | 1900 | 1900  | 1900 | 1900  |
| Lane Width (ft)         | 11    | 12   | 12   | 11    | 10   | 10    |
| Storage Length (ft)     |       | 0    | 0    |       | 0    | 50    |
| Storage Lanes           |       | 0    | 0    |       | 1    | 1     |
| Taper Length (ft)       |       |      | 25   |       | 25   |       |
| Lane Util. Factor       | 0.95  | 0.95 | 1.00 | 1.00  | 1.00 | 1.00  |
| Frt                     | 0.999 |      |      |       |      | 0.850 |
| Flt Protected           |       |      |      | 0.995 |      |       |
| Satd. Flow (prot)       | 3352  | 0    | 0    | 1757  | 1705 | 1449  |
| Flt Permitted           |       |      |      | 0.995 |      |       |
| Satd. Flow (perm)       | 3352  | 0    | 0    | 1757  | 1705 | 1449  |
| Link Speed (mph)        | 30    |      |      | 30    | 25   |       |
| Link Distance (ft)      | 1095  |      |      | 214   | 782  |       |
| Travel Time (s)         | 24.9  |      |      | 4.9   | 21.3 |       |
| Peak Hour Factor        | 0.80  | 0.80 | 0.91 | 0.91  | 0.80 | 0.80  |
| Heavy Vehicles (%)      | 4%    | 4%   | 4%   | 4%    | 4%   | 4%    |
| Adj. Flow (vph)         | 339   | 3    | 70   | 696   | 0    | 76    |
| Shared Lane Traffic (%) |       |      |      |       |      |       |
| Lane Group Flow (vph)   | 342   | 0    | 0    | 766   | 0    | 76    |
| Sign Control            | Free  |      |      | Free  | Stop |       |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 51.1% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1.1

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↑↑   |      |      | ↑    | ↑    | ↑    |
| Traffic Vol, veh/h       | 271  | 2    | 64   | 633  | 0    | 61   |
| Future Vol, veh/h        | 271  | 2    | 64   | 633  | 0    | 61   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | 0    | 50   |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 80   | 80   | 91   | 91   | 80   | 80   |
| Heavy Vehicles, %        | 4    | 4    | 4    | 4    | 4    | 4    |
| Mvmt Flow                | 339  | 3    | 70   | 696  | 0    | 76   |

| Major/Minor          | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0      | 0      | 341    |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Critical Hdwy        | -      | -      | 4.16   |
| Critical Hdwy Stg 1  | -      | -      | -      |
| Critical Hdwy Stg 2  | -      | -      | -      |
| Follow-up Hdwy       | -      | -      | 2.238  |
| Pot Cap-1 Maneuver   | -      | -      | 1204   |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | -      | -      | 1204   |
| Mov Cap-2 Maneuver   | -      | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |

| Approach             | EB | WB  | NB  |
|----------------------|----|-----|-----|
| HCM Control Delay, s | 0  | 0.8 | 9.7 |
| HCM LOS              |    |     | A   |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | -     | 838   | -   | -   | 1204  | -   |
| HCM Lane V/C Ratio    | -     | 0.091 | -   | -   | 0.058 | -   |
| HCM Control Delay (s) | 0     | 9.7   | -   | -   | 8.2   | 0   |
| HCM Lane LOS          | A     | A     | -   | -   | A     | A   |
| HCM 95th %tile Q(veh) | -     | 0.3   | -   | -   | 0.2   | -   |

202: Route 732 (Black Rock Turnpike) & Judd Street 2040 Background Optimized Conditions  
 Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (vph)    | 20                                                                                | 68                                                                                | 76                                                                                | 357                                                                               | 394                                                                               | 30                                                                                |
| Future Volume (vph)     | 20                                                                                | 68                                                                                | 76                                                                                | 357                                                                               | 394                                                                               | 30                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Storage Length (ft)     | 0                                                                                 | 0                                                                                 | 25                                                                                |                                                                                   |                                                                                   | 0                                                                                 |
| Storage Lanes           | 1                                                                                 | 0                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 25                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.896                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.990                                                                             |                                                                                   |
| Flt Protected           | 0.989                                                                             |                                                                                   |                                                                                   | 0.991                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1817                                                                              | 0                                                                                 | 0                                                                                 | 3407                                                                              | 1791                                                                              | 0                                                                                 |
| Flt Permitted           | 0.989                                                                             |                                                                                   |                                                                                   | 0.991                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1817                                                                              | 0                                                                                 | 0                                                                                 | 3407                                                                              | 1791                                                                              | 0                                                                                 |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 586                                                                               |                                                                                   |                                                                                   | 395                                                                               | 218                                                                               |                                                                                   |
| Travel Time (s)         | 16.0                                                                              |                                                                                   |                                                                                   | 9.0                                                                               | 5.0                                                                               |                                                                                   |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |
| Heavy Vehicles (%)      | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                |
| Adj. Flow (vph)         | 25                                                                                | 85                                                                                | 83                                                                                | 388                                                                               | 428                                                                               | 33                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 110                                                                               | 0                                                                                 | 0                                                                                 | 471                                                                               | 461                                                                               | 0                                                                                 |
| Sign Control            | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 49.9% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 2.3

| Movement                 | EBL                                                                               | EBR  | NBL  | NBT                                                                               | SBT                                                                               | SBR  |
|--------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |  |      |      |  |  |      |
| Traffic Vol, veh/h       | 20                                                                                | 68   | 76   | 357                                                                               | 394                                                                               | 30   |
| Future Vol, veh/h        | 20                                                                                | 68   | 76   | 357                                                                               | 394                                                                               | 30   |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0    | 0                                                                                 | 0                                                                                 | 0    |
| Sign Control             | Stop                                                                              | Stop | Free | Free                                                                              | Free                                                                              | Free |
| RT Channelized           | -                                                                                 | None | -    | None                                                                              | -                                                                                 | None |
| Storage Length           | 0                                                                                 | -    | 25   | -                                                                                 | -                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 80                                                                                | 80   | 92   | 92                                                                                | 92                                                                                | 92   |
| Heavy Vehicles, %        | 5                                                                                 | 5    | 5    | 5                                                                                 | 5                                                                                 | 5    |
| Mvmt Flow                | 25                                                                                | 85   | 83   | 388                                                                               | 428                                                                               | 33   |

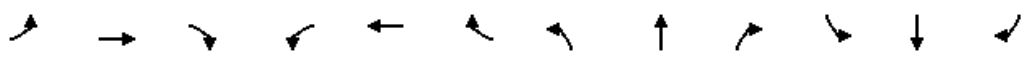
| Major/Minor          | Minor2 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 804    | 445    | 461    |
| Stage 1              | 445    | -      | -      |
| Stage 2              | 359    | -      | -      |
| Critical Hdwy        | 6.675  | 6.275  | 4.175  |
| Critical Hdwy Stg 1  | 5.475  | -      | -      |
| Critical Hdwy Stg 2  | 5.875  | -      | -      |
| Follow-up Hdwy       | 3.5475 | 3.3475 | 2.2475 |
| Pot Cap-1 Maneuver   | 331    | 605    | 1080   |
| Stage 1              | 637    | -      | -      |
| Stage 2              | 671    | -      | -      |
| Platoon blocked, %   |        |        |        |
| Mov Cap-1 Maneuver   | 299    | 605    | 1080   |
| Mov Cap-2 Maneuver   | 299    | -      | -      |
| Stage 1              | 637    | -      | -      |
| Stage 2              | 605    | -      | -      |

| Approach             | EB   | NB  | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 14.4 | 1.8 | 0  |
| HCM LOS              | B    |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1080  | -   | 491   | -   | -   |
| HCM Lane V/C Ratio    | 0.076 | -   | 0.224 | -   | -   |
| HCM Control Delay (s) | 8.6   | 0.3 | 14.4  | -   | -   |
| HCM Lane LOS          | A     | A   | B     | -   | -   |
| HCM 95th %tile Q(veh) | 0.2   | -   | 0.9   | -   | -   |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike Interchange Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |       |      |       |       |      |       |       |      |       |       |      |
|-------------------------|------------------------------------------------------------------------------------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|
| Lane Group              | EBL                                                                                | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
| Lane Configurations     |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Traffic Volume (vph)    | 6                                                                                  | 0     | 1    | 46    | 0     | 47   | 5     | 662   | 62   | 58    | 724   | 5    |
| Future Volume (vph)     | 6                                                                                  | 0     | 1    | 46    | 0     | 47   | 5     | 662   | 62   | 58    | 724   | 5    |
| Ideal Flow (vphpl)      | 1900                                                                               | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12                                                                                 | 16    | 12   | 12    | 16    | 12   | 12    | 13    | 12   | 12    | 13    | 12   |
| Lane Util. Factor       | 1.00                                                                               | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 |
| Frt                     |                                                                                    | 0.985 |      |       | 0.932 |      |       | 0.989 |      |       | 0.999 |      |
| Flt Protected           |                                                                                    | 0.957 |      |       | 0.976 |      |       |       |      |       | 0.996 |      |
| Satd. Flow (prot)       | 0                                                                                  | 1990  | 0    | 0     | 1920  | 0    | 0     | 1904  | 0    | 0     | 1915  | 0    |
| Flt Permitted           |                                                                                    | 0.727 |      |       | 0.839 |      |       | 0.996 |      |       | 0.905 |      |
| Satd. Flow (perm)       | 0                                                                                  | 1512  | 0    | 0     | 1651  | 0    | 0     | 1896  | 0    | 0     | 1740  | 0    |
| Right Turn on Red       |                                                                                    |       | Yes  |       |       | Yes  |       |       | Yes  |       |       | Yes  |
| Satd. Flow (RTOR)       |                                                                                    | 35    |      |       | 53    |      |       | 16    |      |       | 1     |      |
| Link Speed (mph)        |                                                                                    | 25    |      |       | 30    |      |       | 35    |      |       | 35    |      |
| Link Distance (ft)      |                                                                                    | 378   |      |       | 442   |      |       | 1898  |      |       | 522   |      |
| Travel Time (s)         |                                                                                    | 10.3  |      |       | 10.0  |      |       | 37.0  |      |       | 10.2  |      |
| Peak Hour Factor        | 0.80                                                                               | 0.80  | 0.80 | 0.84  | 0.84  | 0.84 | 0.95  | 0.95  | 0.95 | 0.94  | 0.94  | 0.94 |
| Adj. Flow (vph)         | 8                                                                                  | 0     | 1    | 55    | 0     | 56   | 5     | 697   | 65   | 62    | 770   | 5    |
| Shared Lane Traffic (%) |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 0                                                                                  | 9     | 0    | 0     | 111   | 0    | 0     | 767   | 0    | 0     | 837   | 0    |
| Turn Type               | Perm                                                                               | NA    |      | Perm  | NA    |      | Perm  | NA    |      | Perm  | NA    |      |
| Protected Phases        |                                                                                    | 4     |      |       | 8     |      |       | 2     |      |       | 6     |      |
| Permitted Phases        | 4                                                                                  |       |      | 8     |       |      | 2     |       |      | 6     |       |      |
| Detector Phase          | 4                                                                                  | 4     |      | 8     | 8     |      | 2     | 2     |      | 6     | 6     |      |
| Switch Phase            |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Minimum Initial (s)     | 7.0                                                                                | 7.0   |      | 7.0   | 7.0   |      | 15.0  | 15.0  |      | 15.0  | 15.0  |      |
| Minimum Split (s)       | 11.7                                                                               | 11.7  |      | 11.7  | 11.7  |      | 20.6  | 20.6  |      | 20.6  | 20.6  |      |
| Total Split (s)         | 15.0                                                                               | 15.0  |      | 15.0  | 15.0  |      | 65.0  | 65.0  |      | 65.0  | 65.0  |      |
| Total Split (%)         | 18.8%                                                                              | 18.8% |      | 18.8% | 18.8% |      | 81.3% | 81.3% |      | 81.3% | 81.3% |      |
| Yellow Time (s)         | 3.3                                                                                | 3.3   |      | 3.3   | 3.3   |      | 4.0   | 4.0   |      | 4.0   | 4.0   |      |
| All-Red Time (s)        | 1.4                                                                                | 1.4   |      | 1.4   | 1.4   |      | 1.6   | 1.6   |      | 1.6   | 1.6   |      |
| Lost Time Adjust (s)    |                                                                                    | 0.0   |      |       | 0.0   |      |       | 0.0   |      |       | 0.0   |      |
| Total Lost Time (s)     |                                                                                    | 4.7   |      |       | 4.7   |      |       | 5.6   |      |       | 5.6   |      |
| Lead/Lag                |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Lead-Lag Optimize?      |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Recall Mode             | None                                                                               | None  |      | None  | None  |      | C-Min | C-Min |      | C-Min | C-Min |      |
| Act Effect Green (s)    |                                                                                    | 8.5   |      |       | 8.5   |      |       | 64.6  |      |       | 64.6  |      |
| Actuated g/C Ratio      |                                                                                    | 0.11  |      |       | 0.11  |      |       | 0.81  |      |       | 0.81  |      |
| v/c Ratio               |                                                                                    | 0.05  |      |       | 0.50  |      |       | 0.50  |      |       | 0.60  |      |
| Control Delay           |                                                                                    | 0.4   |      |       | 26.8  |      |       | 2.8   |      |       | 6.5   |      |
| Queue Delay             |                                                                                    | 0.0   |      |       | 0.0   |      |       | 0.0   |      |       | 0.0   |      |
| Total Delay             |                                                                                    | 0.4   |      |       | 26.8  |      |       | 2.8   |      |       | 6.5   |      |
| LOS                     |                                                                                    | A     |      |       | C     |      |       | A     |      |       | A     |      |
| Approach Delay          |                                                                                    | 0.4   |      |       | 26.8  |      |       | 2.8   |      |       | 6.5   |      |
| Approach LOS            |                                                                                    | A     |      |       | C     |      |       | A     |      |       | A     |      |
| Queue Length 50th (ft)  |                                                                                    | 0     |      |       | 28    |      |       | 14    |      |       | 133   |      |
| Queue Length 95th (ft)  |                                                                                    | 0     |      |       | 65    |      |       | 155   |      |       | 291   |      |
| Internal Link Dist (ft) |                                                                                    | 298   |      |       | 362   |      |       | 1818  |      |       | 442   |      |
| Turn Bay Length (ft)    |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |



# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

## 2040 Black Rock Turnpike Optimized Conditions

### Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Base Capacity (vph)    |                                                                                   | 231                                                                               |                                                                                   |                                                                                   | 264                                                                               |                                                                                   |                                                                                    | 1542                                                                                |                                                                                     |                                                                                     | 1412                                                                                |                                                                                     |
| Starvation Cap Reductn |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   | 0.04                                                                              |                                                                                   |                                                                                   | 0.42                                                                              |                                                                                   |                                                                                    | 0.50                                                                                |                                                                                     |                                                                                     | 0.59                                                                                |                                                                                     |

#### Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 73 (91%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 6.1

Intersection LOS: A

Intersection Capacity Utilization 93.0%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

|                                                                                          |                                                                                        |
|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
|  Ø2 (R) |  Ø4 |
| 65 s                                                                                     | 15 s                                                                                   |
|  Ø6 (R) |  Ø8 |
| 65 s                                                                                     | 15 s                                                                                   |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive Background Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |      |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3   |
| Lane Configurations     |  |  |  |  |  |  |      |
| Traffic Volume (vph)    | 80                                                                                | 177                                                                               | 173                                                                               | 661                                                                               | 702                                                                               | 72                                                                                |      |
| Future Volume (vph)     | 80                                                                                | 177                                                                               | 173                                                                               | 661                                                                               | 702                                                                               | 72                                                                                |      |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |      |
| Lane Width (ft)         | 10                                                                                | 10                                                                                | 11                                                                                | 11                                                                                | 12                                                                                | 12                                                                                |      |
| Storage Length (ft)     | 0                                                                                 | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   | 0                                                                                 |      |
| Storage Lanes           | 1                                                                                 | 1                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |      |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              |      |
| Frt                     |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.986                                                                             |                                                                                   |      |
| Flt Protected           | 0.950                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |      |
| Satd. Flow (prot)       | 1636                                                                              | 1463                                                                              | 1694                                                                              | 1783                                                                              | 3456                                                                              | 0                                                                                 |      |
| Flt Permitted           | 0.950                                                                             |                                                                                   | 0.300                                                                             |                                                                                   |                                                                                   |                                                                                   |      |
| Satd. Flow (perm)       | 1636                                                                              | 1463                                                                              | 535                                                                               | 1783                                                                              | 3456                                                                              | 0                                                                                 |      |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |      |
| Satd. Flow (RTOR)       |                                                                                   | 216                                                                               |                                                                                   |                                                                                   | 14                                                                                |                                                                                   |      |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 35                                                                                |                                                                                   |      |
| Link Distance (ft)      | 445                                                                               |                                                                                   |                                                                                   | 510                                                                               | 341                                                                               |                                                                                   |      |
| Travel Time (s)         | 12.1                                                                              |                                                                                   |                                                                                   | 11.6                                                                              | 6.6                                                                               |                                                                                   |      |
| Peak Hour Factor        | 0.82                                                                              | 0.82                                                                              | 0.86                                                                              | 0.86                                                                              | 0.97                                                                              | 0.97                                                                              |      |
| Heavy Vehicles (%)      | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                |      |
| Adj. Flow (vph)         | 98                                                                                | 216                                                                               | 201                                                                               | 769                                                                               | 724                                                                               | 74                                                                                |      |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Group Flow (vph)   | 98                                                                                | 216                                                                               | 201                                                                               | 769                                                                               | 798                                                                               | 0                                                                                 |      |
| Turn Type               | Prot                                                                              | Perm                                                                              | pm+pt                                                                             | NA                                                                                | NA                                                                                |                                                                                   |      |
| Protected Phases        | 4                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 | 2                                                                                 |                                                                                   | 3    |
| Permitted Phases        |                                                                                   | 4                                                                                 | 6                                                                                 |                                                                                   |                                                                                   |                                                                                   |      |
| Detector Phase          | 4                                                                                 | 4                                                                                 | 1                                                                                 | 6                                                                                 | 2                                                                                 |                                                                                   |      |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               | 5.0                                                                               | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0  |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              | 9.2                                                                               | 21.9                                                                              | 21.9                                                                              |                                                                                   | 22.0 |
| Total Split (s)         | 13.0                                                                              | 13.0                                                                              | 13.4                                                                              | 45.0                                                                              | 31.6                                                                              |                                                                                   | 22.0 |
| Total Split (%)         | 16.3%                                                                             | 16.3%                                                                             | 16.8%                                                                             | 56.3%                                                                             | 39.5%                                                                             |                                                                                   | 28%  |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               | 3.2                                                                               | 4.9                                                                               | 4.9                                                                               |                                                                                   | 4.0  |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 2.0                                                                               | 2.0                                                                               |                                                                                   | 0.0  |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               | 4.2                                                                               | 6.9                                                                               | 6.9                                                                               |                                                                                   |      |
| Lead/Lag                | Lag                                                                               | Lag                                                                               | Lead                                                                              |                                                                                   | Lag                                                                               |                                                                                   | Lead |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               |                                                                                   | Yes  |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                             | C-Max                                                                             |                                                                                   | None |
| Act Effect Green (s)    | 10.3                                                                              | 10.3                                                                              | 61.5                                                                              | 58.8                                                                              | 46.9                                                                              |                                                                                   |      |
| Actuated g/C Ratio      | 0.13                                                                              | 0.13                                                                              | 0.77                                                                              | 0.74                                                                              | 0.59                                                                              |                                                                                   |      |
| v/c Ratio               | 0.47                                                                              | 0.58                                                                              | 0.38                                                                              | 0.59                                                                              | 0.39                                                                              |                                                                                   |      |
| Control Delay           | 39.6                                                                              | 11.4                                                                              | 4.4                                                                               | 5.5                                                                               | 7.7                                                                               |                                                                                   |      |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Total Delay             | 39.6                                                                              | 11.4                                                                              | 4.4                                                                               | 5.5                                                                               | 7.7                                                                               |                                                                                   |      |
| LOS                     | D                                                                                 | B                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   |      |
| Approach Delay          | 20.2                                                                              |                                                                                   |                                                                                   | 5.3                                                                               | 7.7                                                                               |                                                                                   |      |
| Approach LOS            | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |      |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive Background Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |    |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3 |
| Queue Length 50th (ft)  | 47                                                                                | 0                                                                                 | 13                                                                                | 85                                                                                | 106                                                                               |                                                                                   |    |
| Queue Length 95th (ft)  | 80                                                                                | 43                                                                                | 28                                                                                | 130                                                                               | 96                                                                                |                                                                                   |    |
| Internal Link Dist (ft) | 365                                                                               |                                                                                   |                                                                                   | 430                                                                               | 261                                                                               |                                                                                   |    |
| Turn Bay Length (ft)    |                                                                                   | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   |                                                                                   |    |
| Base Capacity (vph)     | 209                                                                               | 375                                                                               | 551                                                                               | 1311                                                                              | 2031                                                                              |                                                                                   |    |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Reduced v/c Ratio       | 0.47                                                                              | 0.58                                                                              | 0.36                                                                              | 0.59                                                                              | 0.39                                                                              |                                                                                   |    |

## Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 4 (5%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 8.5

Intersection LOS: A

Intersection Capacity Utilization 51.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

|                                                                                            |                                                                                            |                                                                                        |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø3 |  Ø4 |
| 13.4 s                                                                                     | 31.6 s                                                                                     | 22 s                                                                                   | 13 s                                                                                     |
|  Ø6 (R) |                                                                                            |                                                                                        |                                                                                          |
| 45 s                                                                                       |                                                                                            |                                                                                        |                                                                                          |

# 103: Route 58 (Black Rock Turnpike) & Brookside Drive 2040 Background Optimized Conditions

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (vph)    | 68                                                                                | 49                                                                                | 54                                                                                | 767                                                                               | 792                                                                               | 89                                                                                |
| Future Volume (vph)     | 68                                                                                | 49                                                                                | 54                                                                                | 767                                                                               | 792                                                                               | 89                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              |
| Frt                     | 0.943                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.985                                                                             |                                                                                   |
| Flt Protected           | 0.972                                                                             |                                                                                   |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1916                                                                              | 0                                                                                 | 0                                                                                 | 3494                                                                              | 3452                                                                              | 0                                                                                 |
| Flt Permitted           | 0.972                                                                             |                                                                                   |                                                                                   | 0.828                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1916                                                                              | 0                                                                                 | 0                                                                                 | 2902                                                                              | 3452                                                                              | 0                                                                                 |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |
| Satd. Flow (RTOR)       | 40                                                                                |                                                                                   |                                                                                   |                                                                                   | 26                                                                                |                                                                                   |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 347                                                                               |                                                                                   |                                                                                   | 293                                                                               | 336                                                                               |                                                                                   |
| Travel Time (s)         | 9.5                                                                               |                                                                                   |                                                                                   | 6.7                                                                               | 7.6                                                                               |                                                                                   |
| Peak Hour Factor        | 0.86                                                                              | 0.86                                                                              | 0.83                                                                              | 0.83                                                                              | 0.98                                                                              | 0.98                                                                              |
| Heavy Vehicles (%)      | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                |
| Adj. Flow (vph)         | 79                                                                                | 57                                                                                | 65                                                                                | 924                                                                               | 808                                                                               | 91                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 136                                                                               | 0                                                                                 | 0                                                                                 | 989                                                                               | 899                                                                               | 0                                                                                 |
| Turn Type               | Prot                                                                              |                                                                                   | pm+pt                                                                             | NA                                                                                | NA                                                                                |                                                                                   |
| Protected Phases        | 4                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                 | 6                                                                                 |                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Detector Phase          | 4                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                 | 6                                                                                 |                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)     | 9.0                                                                               |                                                                                   | 3.0                                                                               | 15.0                                                                              | 15.0                                                                              |                                                                                   |
| Minimum Split (s)       | 13.0                                                                              |                                                                                   | 8.9                                                                               | 20.4                                                                              | 20.4                                                                              |                                                                                   |
| Total Split (s)         | 19.0                                                                              |                                                                                   | 8.9                                                                               | 61.0                                                                              | 52.1                                                                              |                                                                                   |
| Total Split (%)         | 23.8%                                                                             |                                                                                   | 11.1%                                                                             | 76.3%                                                                             | 65.1%                                                                             |                                                                                   |
| Yellow Time (s)         | 3.0                                                                               |                                                                                   | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               |                                                                                   |
| All-Red Time (s)        | 1.0                                                                               |                                                                                   | 1.7                                                                               | 1.2                                                                               | 1.2                                                                               |                                                                                   |
| Lost Time Adjust (s)    | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |
| Total Lost Time (s)     | 4.0                                                                               |                                                                                   |                                                                                   | 5.4                                                                               | 5.4                                                                               |                                                                                   |
| Lead/Lag                |                                                                                   |                                                                                   | Lag                                                                               |                                                                                   | Lead                                                                              |                                                                                   |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   | Yes                                                                               |                                                                                   |
| Recall Mode             | None                                                                              |                                                                                   | None                                                                              | C-Max                                                                             | C-Max                                                                             |                                                                                   |
| Act Effect Green (s)    | 10.0                                                                              |                                                                                   |                                                                                   | 60.6                                                                              | 60.6                                                                              |                                                                                   |
| Actuated g/C Ratio      | 0.12                                                                              |                                                                                   |                                                                                   | 0.76                                                                              | 0.76                                                                              |                                                                                   |
| v/c Ratio               | 0.50                                                                              |                                                                                   |                                                                                   | 0.45                                                                              | 0.34                                                                              |                                                                                   |
| Control Delay           | 29.4                                                                              |                                                                                   |                                                                                   | 3.4                                                                               | 2.8                                                                               |                                                                                   |
| Queue Delay             | 0.0                                                                               |                                                                                   |                                                                                   | 0.1                                                                               | 0.0                                                                               |                                                                                   |
| Total Delay             | 29.4                                                                              |                                                                                   |                                                                                   | 3.5                                                                               | 2.8                                                                               |                                                                                   |
| LOS                     | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |
| Approach Delay          | 29.4                                                                              |                                                                                   |                                                                                   | 3.5                                                                               | 2.8                                                                               |                                                                                   |
| Approach LOS            | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |
| Queue Length 50th (ft)  | 46                                                                                |                                                                                   |                                                                                   | 71                                                                                | 33                                                                                |                                                                                   |
| Queue Length 95th (ft)  | 89                                                                                |                                                                                   |                                                                                   | 74                                                                                | 78                                                                                |                                                                                   |
| Internal Link Dist (ft) | 267                                                                               |                                                                                   |                                                                                   | 213                                                                               | 256                                                                               |                                                                                   |

# 103: Route 58 (Black Rock Turnpike) & Brookside Drive 2040 Background Optimized Conditions

Timing Plan: Weekday Midday P

|                        |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Turn Bay Length (ft)   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Base Capacity (vph)    | 391                                                                               |                                                                                   |                                                                                   | 2199                                                                              | 2623                                                                              |                                                                                   |
| Starvation Cap Reductn | 0                                                                                 |                                                                                   |                                                                                   | 343                                                                               | 0                                                                                 |                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |
| Storage Cap Reductn    | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |
| Reduced v/c Ratio      | 0.35                                                                              |                                                                                   |                                                                                   | 0.53                                                                              | 0.34                                                                              |                                                                                   |

## Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 3 (4%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.50

Intersection Signal Delay: 4.9

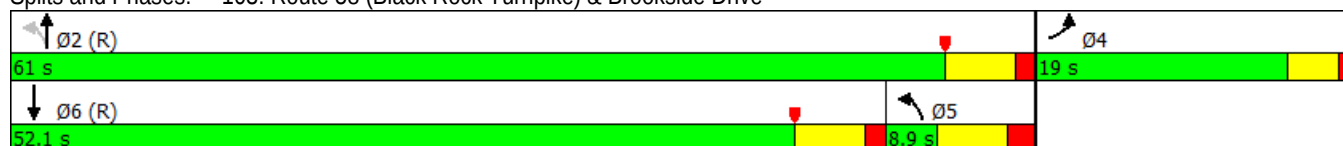
Intersection LOS: A

Intersection Capacity Utilization 67.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive



# 104: Route 58 (Black Rock Turnpike) & Commercial Drive at Blackfield Woods Road Conditions Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

| Lane Group              | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|------|
| Lane Configurations     |       |       |       |       |       |       |       |       |      |       |       |      |
| Traffic Volume (vph)    | 15    | 3     | 33    | 65    | 4     | 149   | 31    | 674   | 54   | 88    | 732   | 22   |
| Future Volume (vph)     | 15    | 3     | 33    | 65    | 4     | 149   | 31    | 674   | 54   | 88    | 732   | 22   |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12    | 12    | 12    | 12    | 12    | 11    | 12    | 11    | 12   | 12    | 11    | 12   |
| Storage Length (ft)     | 0     |       | 0     | 0     |       | 75    | 0     |       | 0    | 0     |       | 0    |
| Storage Lanes           | 0     |       | 1     | 0     |       | 1     | 0     |       | 0    | 0     |       | 0    |
| Taper Length (ft)       | 25    |       |       | 25    |       |       | 25    |       |      | 25    |       |      |
| Lane Util. Factor       | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 0.95  | 0.95  | 0.95 | 0.95  | 0.95  | 0.95 |
| Frt                     |       |       | 0.850 |       |       | 0.850 |       | 0.989 |      |       | 0.996 |      |
| Flt Protected           |       | 0.960 |       |       | 0.955 |       |       | 0.998 |      |       | 0.995 |      |
| Satd. Flow (prot)       | 0     | 1788  | 1583  | 0     | 1779  | 1531  | 0     | 3377  | 0    | 0     | 3391  | 0    |
| Flt Permitted           |       | 0.801 |       |       | 0.723 |       |       | 0.891 |      |       | 0.765 |      |
| Satd. Flow (perm)       | 0     | 1492  | 1583  | 0     | 1347  | 1531  | 0     | 3015  | 0    | 0     | 2607  | 0    |
| Right Turn on Red       |       |       | Yes   |       |       | No    |       |       | Yes  |       |       | Yes  |
| Satd. Flow (RTOR)       |       |       | 120   |       |       |       |       | 15    |      |       | 6     |      |
| Link Speed (mph)        |       | 30    |       |       | 25    |       |       | 30    |      |       | 30    |      |
| Link Distance (ft)      |       | 87    |       |       | 499   |       |       | 713   |      |       | 293   |      |
| Travel Time (s)         |       | 2.0   |       |       | 13.6  |       |       | 16.2  |      |       | 6.7   |      |
| Peak Hour Factor        | 0.80  | 0.80  | 0.80  | 0.80  | 0.80  | 0.80  | 0.89  | 0.89  | 0.89 | 0.96  | 0.96  | 0.96 |
| Adj. Flow (vph)         | 19    | 4     | 41    | 81    | 5     | 186   | 35    | 757   | 61   | 92    | 763   | 23   |
| Shared Lane Traffic (%) |       |       |       |       |       |       |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 0     | 23    | 41    | 0     | 86    | 186   | 0     | 853   | 0    | 0     | 878   | 0    |
| Turn Type               | Perm  | NA    | Perm  | Perm  | NA    | Perm  | Perm  | NA    |      | pm+pt | NA    |      |
| Protected Phases        |       | 4     |       |       | 8     |       |       | 2     |      | 1     | 6     |      |
| Permitted Phases        | 4     |       | 4     | 8     |       | 8     | 2     |       |      | 6     |       |      |
| Detector Phase          | 4     | 4     | 4     | 8     | 8     | 8     | 2     | 2     |      | 1     | 6     |      |
| Switch Phase            |       |       |       |       |       |       |       |       |      |       |       |      |
| Minimum Initial (s)     | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 15.0  | 15.0  |      | 3.0   | 15.0  |      |
| Minimum Split (s)       | 13.0  | 13.0  | 13.0  | 13.0  | 13.0  | 13.0  | 20.3  | 20.3  |      | 9.5   | 20.3  |      |
| Total Split (s)         | 24.0  | 24.0  | 24.0  | 24.0  | 24.0  | 24.0  | 46.5  | 46.5  |      | 9.5   | 56.0  |      |
| Total Split (%)         | 30.0% | 30.0% | 30.0% | 30.0% | 30.0% | 30.0% | 58.1% | 58.1% |      | 11.9% | 70.0% |      |
| Yellow Time (s)         | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 4.3   | 4.3   |      | 4.3   | 4.3   |      |
| All-Red Time (s)        | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |      | 2.2   | 1.0   |      |
| Lost Time Adjust (s)    |       | 0.0   | 0.0   |       | 0.0   | 0.0   |       | 0.0   |      |       | 0.0   |      |
| Total Lost Time (s)     |       | 4.0   | 4.0   |       | 4.0   | 4.0   |       | 5.3   |      |       | 5.3   |      |
| Lead/Lag                |       |       |       |       |       |       | Lead  | Lead  |      |       | Lag   |      |
| Lead-Lag Optimize?      |       |       |       |       |       |       | Yes   | Yes   |      |       | Yes   |      |
| Recall Mode             | None  | None  | None  | None  | None  | None  | C-Max | C-Max |      | None  | C-Max |      |
| Act Effect Green (s)    |       | 14.2  | 14.2  |       | 14.2  | 14.2  |       | 56.5  |      |       | 56.5  |      |
| Actuated g/C Ratio      |       | 0.18  | 0.18  |       | 0.18  | 0.18  |       | 0.71  |      |       | 0.71  |      |
| v/c Ratio               |       | 0.09  | 0.11  |       | 0.36  | 0.69  |       | 0.40  |      |       | 0.48  |      |
| Control Delay           |       | 25.9  | 0.6   |       | 31.8  | 43.3  |       | 5.9   |      |       | 4.8   |      |
| Queue Delay             |       | 0.0   | 0.0   |       | 0.0   | 0.0   |       | 0.0   |      |       | 0.1   |      |
| Total Delay             |       | 25.9  | 0.6   |       | 31.8  | 43.3  |       | 5.9   |      |       | 4.9   |      |
| LOS                     |       | C     | A     |       | C     | D     |       | A     |      |       | A     |      |
| Approach Delay          |       | 9.7   |       |       | 39.7  |       |       | 5.9   |      |       | 4.9   |      |
| Approach LOS            |       | A     |       |       | D     |       |       | A     |      |       | A     |      |
| Queue Length 50th (ft)  |       | 10    | 0     |       | 38    | 88    |       | 73    |      |       | 40    |      |



# 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road Conditions Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         | EBL | EBT  | EBR  | WBL | WBT  | WBR  | NBL | NBT  | NBR | SBL | SBT  | SBR |
|-------------------------|-----|------|------|-----|------|------|-----|------|-----|-----|------|-----|
| Queue Length 95th (ft)  |     | 24   | 0    |     | 64   | 123  |     | 133  |     |     | 153  |     |
| Internal Link Dist (ft) |     | 7    |      |     | 419  |      |     | 633  |     |     | 213  |     |
| Turn Bay Length (ft)    |     |      |      |     |      | 75   |     |      |     |     |      |     |
| Base Capacity (vph)     |     | 373  | 485  |     | 336  | 382  |     | 2133 |     |     | 1843 |     |
| Starvation Cap Reductn  |     | 0    | 0    |     | 0    | 0    |     | 0    |     |     | 181  |     |
| Spillback Cap Reductn   |     | 0    | 0    |     | 0    | 0    |     | 0    |     |     | 0    |     |
| Storage Cap Reductn     |     | 0    | 0    |     | 0    | 0    |     | 0    |     |     | 0    |     |
| Reduced v/c Ratio       |     | 0.06 | 0.08 |     | 0.26 | 0.49 |     | 0.40 |     |     | 0.53 |     |

## Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 10.0

Intersection LOS: B

Intersection Capacity Utilization 67.4%

ICU Level of Service C

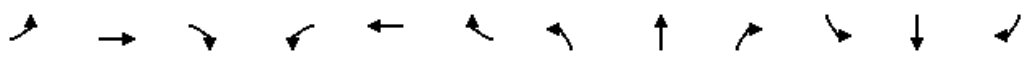
Analysis Period (min) 15

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road

|                                                                                                     |                                                                                                |                                                                                                 |
|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
|  Ø2 (R)<br>46.5 s |  Ø1<br>9.5 s |  Ø4<br>24 s |
|  Ø6 (R)<br>56 s  |  Ø8<br>24 s |                                                                                                 |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 520 (Black Rock Turnpike) - Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |       |      |       |       |      |       |       |      |       |       |      |
|-------------------------|------------------------------------------------------------------------------------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|
| Lane Group              | EBL                                                                                | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
| Lane Configurations     |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Traffic Volume (vph)    | 79                                                                                 | 563   | 193  | 126   | 585   | 109  | 207   | 204   | 133  | 178   | 196   | 55   |
| Future Volume (vph)     | 79                                                                                 | 563   | 193  | 126   | 585   | 109  | 207   | 204   | 133  | 178   | 196   | 55   |
| Ideal Flow (vphpl)      | 1900                                                                               | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 11                                                                                 | 11    | 12   | 11    | 12    | 12   | 11    | 11    | 12   | 12    | 12    | 12   |
| Storage Length (ft)     | 200                                                                                |       | 0    | 175   |       | 0    | 210   |       | 0    | 170   |       | 0    |
| Storage Lanes           | 1                                                                                  |       | 0    | 1     |       | 0    | 1     |       | 0    | 1     |       | 0    |
| Taper Length (ft)       | 85                                                                                 |       |      | 75    |       |      | 100   |       |      | 100   |       |      |
| Lane Util. Factor       | 1.00                                                                               | 0.95  | 0.95 | 1.00  | 0.95  | 0.95 | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 |
| Frt                     |                                                                                    | 0.962 |      |       | 0.976 |      |       | 0.941 |      |       | 0.967 |      |
| Flt Protected           | 0.950                                                                              |       |      | 0.950 |       |      | 0.950 |       |      | 0.950 |       |      |
| Satd. Flow (prot)       | 1711                                                                               | 3291  | 0    | 1711  | 3454  | 0    | 1711  | 1694  | 0    | 1770  | 1801  | 0    |
| Flt Permitted           | 0.950                                                                              |       |      | 0.950 |       |      | 0.430 |       |      | 0.333 |       |      |
| Satd. Flow (perm)       | 1711                                                                               | 3291  | 0    | 1711  | 3454  | 0    | 774   | 1694  | 0    | 620   | 1801  | 0    |
| Right Turn on Red       |                                                                                    |       | Yes  |       |       | Yes  |       |       | Yes  |       |       | No   |
| Satd. Flow (RTOR)       |                                                                                    | 31    |      |       | 14    |      |       | 20    |      |       |       |      |
| Link Speed (mph)        |                                                                                    | 30    |      |       | 30    |      |       | 30    |      |       | 25    |      |
| Link Distance (ft)      |                                                                                    | 436   |      |       | 368   |      |       | 438   |      |       | 355   |      |
| Travel Time (s)         |                                                                                    | 9.9   |      |       | 8.4   |      |       | 10.0  |      |       | 9.7   |      |
| Peak Hour Factor        | 0.91                                                                               | 0.91  | 0.91 | 0.93  | 0.93  | 0.93 | 0.96  | 0.96  | 0.96 | 0.96  | 0.96  | 0.96 |
| Adj. Flow (vph)         | 87                                                                                 | 619   | 212  | 135   | 629   | 117  | 216   | 213   | 139  | 185   | 204   | 57   |
| Shared Lane Traffic (%) |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 87                                                                                 | 831   | 0    | 135   | 746   | 0    | 216   | 352   | 0    | 185   | 261   | 0    |
| Turn Type               | Prot                                                                               | NA    |      | Prot  | NA    |      | pm+pt | NA    |      | pm+pt | NA    |      |
| Protected Phases        | 5                                                                                  | 2     |      | 1     | 6     |      | 7     | 4     |      | 3     | 8     |      |
| Permitted Phases        |                                                                                    |       |      |       |       |      | 4     |       |      | 8     |       |      |
| Detector Phase          | 5                                                                                  | 2     |      | 1     | 6     |      | 7     | 4     |      | 3     | 8     |      |
| Switch Phase            |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Minimum Initial (s)     | 5.0                                                                                | 15.0  |      | 5.0   | 15.0  |      | 5.0   | 10.0  |      | 5.0   | 10.0  |      |
| Minimum Split (s)       | 9.7                                                                                | 21.6  |      | 9.7   | 21.6  |      | 9.3   | 16.8  |      | 9.3   | 16.8  |      |
| Total Split (s)         | 15.8                                                                               | 43.3  |      | 17.0  | 44.5  |      | 17.9  | 36.0  |      | 15.7  | 33.8  |      |
| Total Split (%)         | 10.9%                                                                              | 29.9% |      | 11.7% | 30.7% |      | 12.3% | 24.8% |      | 10.8% | 23.3% |      |
| Yellow Time (s)         | 3.0                                                                                | 4.1   |      | 3.0   | 4.1   |      | 3.3   | 4.4   |      | 3.3   | 4.4   |      |
| All-Red Time (s)        | 1.7                                                                                | 2.5   |      | 1.7   | 2.5   |      | 1.0   | 2.4   |      | 1.0   | 2.4   |      |
| Lost Time Adjust (s)    | 0.0                                                                                | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      |
| Total Lost Time (s)     | 4.7                                                                                | 6.6   |      | 4.7   | 6.6   |      | 4.3   | 6.8   |      | 4.3   | 6.8   |      |
| Lead/Lag                | Lead                                                                               | Lag   |      | Lead  | Lag   |      | Lead  | Lag   |      | Lead  | Lag   |      |
| Lead-Lag Optimize?      | Yes                                                                                | Yes   |      | Yes   | Yes   |      | Yes   | Yes   |      | Yes   | Yes   |      |
| Recall Mode             | None                                                                               | Min   |      | None  | Min   |      | None  | None  |      | None  | None  |      |
| Act Effct Green (s)     | 9.5                                                                                | 31.9  |      | 12.1  | 34.6  |      | 43.9  | 28.6  |      | 41.1  | 27.2  |      |
| Actuated g/C Ratio      | 0.09                                                                               | 0.30  |      | 0.11  | 0.32  |      | 0.41  | 0.27  |      | 0.39  | 0.26  |      |
| v/c Ratio               | 0.57                                                                               | 0.82  |      | 0.70  | 0.66  |      | 0.50  | 0.75  |      | 0.51  | 0.57  |      |
| Control Delay           | 62.7                                                                               | 41.2  |      | 66.1  | 33.8  |      | 24.5  | 45.6  |      | 25.3  | 41.3  |      |
| Queue Delay             | 0.0                                                                                | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      |
| Total Delay             | 62.7                                                                               | 41.2  |      | 66.1  | 33.8  |      | 24.5  | 45.6  |      | 25.3  | 41.3  |      |
| LOS                     | E                                                                                  | D     |      | E     | C     |      | C     | D     |      | C     | D     |      |
| Approach Delay          |                                                                                    | 43.2  |      |       | 38.7  |      |       | 37.5  |      |       | 34.6  |      |
| Approach LOS            |                                                                                    | D     |      |       | D     |      |       | D     |      |       | C     |      |
| Queue Length 50th (ft)  | 58                                                                                 | 270   |      | 91    | 229   |      | 94    | 211   |      | 78    | 159   |      |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 520 (Black Rock Turnpike) - Idealized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |      |
|-------------------------|------|
| Lane Group              | Ø9   |
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 33.0 |
| Total Split (s)         | 33.0 |
| Total Split (%)         | 23%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)

Timing Plan: Weekday Midday P

|                         | EBL  | EBT  | EBR | WBL  | WBT  | WBR | NBL  | NBT  | NBR | SBL  | SBT  | SBR |
|-------------------------|------|------|-----|------|------|-----|------|------|-----|------|------|-----|
| Queue Length 95th (ft)  | 114  | 346  |     | #188 | 298  |     | 159  | #358 |     | 136  | 256  |     |
| Internal Link Dist (ft) |      | 356  |     |      | 288  |     |      | 358  |     |      | 275  |     |
| Turn Bay Length (ft)    | 200  |      |     | 175  |      |     | 210  |      |     | 170  |      |     |
| Base Capacity (vph)     | 178  | 1157 |     | 198  | 1241 |     | 445  | 480  |     | 362  | 460  |     |
| Starvation Cap Reductn  | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     |
| Spillback Cap Reductn   | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     |
| Storage Cap Reductn     | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     |
| Reduced v/c Ratio       | 0.49 | 0.72 |     | 0.68 | 0.60 |     | 0.49 | 0.73 |     | 0.51 | 0.57 |     |

## Intersection Summary

Area Type: Other

Cycle Length: 145

Actuated Cycle Length: 106.5

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 39.3

Intersection LOS: D

Intersection Capacity Utilization 76.1%

ICU Level of Service D

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)

|        |        |      |        |        |
|--------|--------|------|--------|--------|
| Ø1     | Ø2     | Ø9   | Ø3     | Ø4     |
| 17 s   | 43.3 s | 33 s | 15.7 s | 36 s   |
| Ø5     | Ø6     |      | Ø7     | Ø8     |
| 15.8 s | 44.5 s |      | 17.9 s | 33.8 s |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø9 |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway/Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

| Lane Group              | EBL   | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
|-------------------------|-------|-------|------|-------|-------|------|-------|-------|-------|-------|-------|-------|
| Lane Configurations     |       | ↩↩    |      |       | ↩↩    |      |       | ↩     | ↩     |       | ↩     | ↩     |
| Traffic Volume (vph)    | 72    | 677   | 32   | 60    | 613   | 69   | 163   | 12    | 82    | 54    | 13    | 33    |
| Future Volume (vph)     | 72    | 677   | 32   | 60    | 613   | 69   | 163   | 12    | 82    | 54    | 13    | 33    |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  |
| Lane Width (ft)         | 12    | 11    | 12   | 12    | 11    | 12   | 12    | 13    | 13    | 12    | 13    | 13    |
| Storage Length (ft)     | 0     |       | 0    | 0     |       | 0    | 0     |       | 25    | 0     |       | 25    |
| Storage Lanes           | 0     |       | 0    | 0     |       | 0    | 0     |       | 1     | 0     |       | 1     |
| Taper Length (ft)       | 25    |       |      | 25    |       |      | 25    |       |       | 25    |       |       |
| Lane Util. Factor       | 0.95  | 0.95  | 0.95 | 0.95  | 0.95  | 0.95 | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Frt                     |       | 0.994 |      |       | 0.986 |      |       |       | 0.850 |       |       | 0.850 |
| Flt Protected           |       | 0.995 |      |       | 0.996 |      |       | 0.956 |       |       | 0.961 |       |
| Satd. Flow (prot)       | 0     | 3351  | 0    | 0     | 3327  | 0    | 0     | 1822  | 1620  | 0     | 1832  | 1620  |
| Flt Permitted           |       | 0.802 |      |       | 0.810 |      |       | 0.686 |       |       | 0.664 |       |
| Satd. Flow (perm)       | 0     | 2701  | 0    | 0     | 2706  | 0    | 0     | 1308  | 1620  | 0     | 1266  | 1620  |
| Right Turn on Red       |       |       | Yes  |       |       | Yes  |       |       | Yes   |       |       | Yes   |
| Satd. Flow (RTOR)       |       | 7     |      |       | 15    |      |       |       | 147   |       |       | 147   |
| Link Speed (mph)        |       | 30    |      |       | 30    |      |       | 25    |       |       | 25    |       |
| Link Distance (ft)      |       | 442   |      |       | 502   |      |       | 142   |       |       | 135   |       |
| Travel Time (s)         |       | 10.0  |      |       | 11.4  |      |       | 3.9   |       |       | 3.7   |       |
| Peak Hour Factor        | 0.91  | 0.91  | 0.91 | 0.97  | 0.97  | 0.97 | 0.95  | 0.95  | 0.95  | 0.88  | 0.88  | 0.88  |
| Heavy Vehicles (%)      | 3%    | 3%    | 3%   | 3%    | 3%    | 3%   | 3%    | 3%    | 3%    | 3%    | 3%    | 3%    |
| Adj. Flow (vph)         | 79    | 744   | 35   | 62    | 632   | 71   | 172   | 13    | 86    | 61    | 15    | 38    |
| Shared Lane Traffic (%) |       |       |      |       |       |      |       |       |       |       |       |       |
| Lane Group Flow (vph)   | 0     | 858   | 0    | 0     | 765   | 0    | 0     | 185   | 86    | 0     | 76    | 38    |
| Turn Type               | pm+pt | NA    |      | Perm  | NA    |      | Perm  | NA    | Perm  | Perm  | NA    | Perm  |
| Protected Phases        | 1     | 6     |      |       | 2     |      |       | 4     |       |       | 4     |       |
| Permitted Phases        | 6     |       |      | 2     |       |      | 4     |       | 4     | 4     |       | 4     |
| Detector Phase          | 1     | 6     |      | 2     | 2     |      | 4     | 4     | 4     | 4     | 4     | 4     |
| Switch Phase            |       |       |      |       |       |      |       |       |       |       |       |       |
| Minimum Initial (s)     | 5.0   | 15.0  |      | 15.0  | 15.0  |      | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   |
| Minimum Split (s)       | 9.0   | 20.8  |      | 20.8  | 20.8  |      | 11.0  | 11.0  | 11.0  | 11.0  | 11.0  | 11.0  |
| Total Split (s)         | 9.0   | 42.0  |      | 33.0  | 33.0  |      | 16.0  | 16.0  | 16.0  | 16.0  | 16.0  | 16.0  |
| Total Split (%)         | 11.3% | 52.5% |      | 41.3% | 41.3% |      | 20.0% | 20.0% | 20.0% | 20.0% | 20.0% | 20.0% |
| Yellow Time (s)         | 3.0   | 4.3   |      | 4.3   | 4.3   |      | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |
| All-Red Time (s)        | 1.0   | 1.5   |      | 1.5   | 1.5   |      | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s)    |       | 0.0   |      |       | 0.0   |      |       | 0.0   | 0.0   |       | 0.0   | 0.0   |
| Total Lost Time (s)     |       | 5.8   |      |       | 5.8   |      |       | 4.0   | 4.0   |       | 4.0   | 4.0   |
| Lead/Lag                | Lead  |       |      | Lag   | Lag   |      | Lag   | Lag   | Lag   | Lag   | Lag   | Lag   |
| Lead-Lag Optimize?      | Yes   |       |      | Yes   | Yes   |      | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Recall Mode             | Min   | C-Max |      | C-Max | C-Max |      | None  | None  | None  | None  | None  | None  |
| Act Effect Green (s)    |       | 52.4  |      |       | 42.9  |      |       | 17.8  | 17.8  |       | 17.8  | 17.8  |
| Actuated g/C Ratio      |       | 0.66  |      |       | 0.54  |      |       | 0.22  | 0.22  |       | 0.22  | 0.22  |
| v/c Ratio               |       | 0.48  |      |       | 0.52  |      |       | 0.64  | 0.18  |       | 0.27  | 0.08  |
| Control Delay           |       | 8.1   |      |       | 5.4   |      |       | 38.2  | 1.8   |       | 27.2  | 0.3   |
| Queue Delay             |       | 0.0   |      |       | 0.0   |      |       | 0.0   | 0.0   |       | 0.0   | 0.0   |
| Total Delay             |       | 8.1   |      |       | 5.4   |      |       | 38.2  | 1.8   |       | 27.2  | 0.3   |
| LOS                     |       | A     |      |       | A     |      |       | D     | A     |       | C     | A     |
| Approach Delay          |       | 8.1   |      |       | 5.4   |      |       | 26.6  |       |       | 18.3  |       |
| Approach LOS            |       | A     |      |       | A     |      |       | C     |       |       | B     |       |



106: Turnpike Shopping Center Driveway/Fairway Plaza 2040 Bwy & Route 58 (Black Rock Turnpike)  
 Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

| Lane Group              | Ø3   |
|-------------------------|------|
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Heavy Vehicles (%)      |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 3    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 22.0 |
| Total Split (s)         | 22.0 |
| Total Split (%)         | 28%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                | Lead |
| Lead-Lag Optimize?      | Yes  |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  |                                                                                   | 92                                                                                |                                                                                   |                                                                                   | 33                                                                                |                                                                                   |                                                                                    | 83                                                                                  | 0                                                                                   |                                                                                     | 31                                                                                  | 0                                                                                   |
| Queue Length 95th (ft)  |                                                                                   | 143                                                                               |                                                                                   |                                                                                   | 41                                                                                |                                                                                   |                                                                                    | 143                                                                                 | 8                                                                                   |                                                                                     | 63                                                                                  | 0                                                                                   |
| Internal Link Dist (ft) |                                                                                   | 362                                                                               |                                                                                   |                                                                                   | 422                                                                               |                                                                                   |                                                                                    | 62                                                                                  |                                                                                     |                                                                                     | 55                                                                                  |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |
| Base Capacity (vph)     |                                                                                   | 1802                                                                              |                                                                                   |                                                                                   | 1458                                                                              |                                                                                   |                                                                                    | 290                                                                                 | 474                                                                                 |                                                                                     | 281                                                                                 | 474                                                                                 |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       |                                                                                   | 0.48                                                                              |                                                                                   |                                                                                   | 0.52                                                                              |                                                                                   |                                                                                    | 0.64                                                                                | 0.18                                                                                |                                                                                     | 0.27                                                                                | 0.08                                                                                |

## Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 9 (11%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 10.2

Intersection LOS: B

Intersection Capacity Utilization 72.0%

ICU Level of Service C

Analysis Period (min) 15

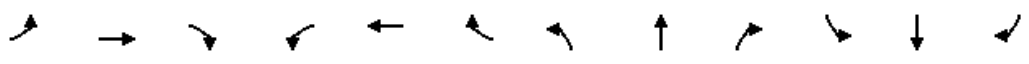
Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                            |                                                                                        |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø3 |  Ø4 |
| 9 s                                                                                        | 33 s                                                                                       | 22 s                                                                                   | 16 s                                                                                     |
|  Ø6 (R) |                                                                                            |                                                                                        |                                                                                          |
| 42 s                                                                                       |                                                                                            |                                                                                        |                                                                                          |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø3 |
| Queue Length 50th (ft)  |    |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |

# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) and Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |       |      |       |       |      |       |       |       |       |       |      |
|-------------------------|------------------------------------------------------------------------------------|-------|------|-------|-------|------|-------|-------|-------|-------|-------|------|
| Lane Group              | EBL                                                                                | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR   | SBL   | SBT   | SBR  |
| Lane Configurations     |                                                                                    | ↔↔    |      |       | ↔↔    |      |       | ↔     | ↔     | ↔     | ↔     |      |
| Traffic Volume (vph)    | 3                                                                                  | 724   | 107  | 47    | 684   | 1    | 93    | 2     | 51    | 3     | 10    | 8    |
| Future Volume (vph)     | 3                                                                                  | 724   | 107  | 47    | 684   | 1    | 93    | 2     | 51    | 3     | 10    | 8    |
| Ideal Flow (vphpl)      | 1900                                                                               | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12                                                                                 | 11    | 12   | 12    | 11    | 12   | 12    | 10    | 10    | 12    | 12    | 12   |
| Storage Length (ft)     | 0                                                                                  |       | 0    | 0     |       | 0    | 0     |       | 250   | 0     |       | 0    |
| Storage Lanes           | 0                                                                                  |       | 0    | 0     |       | 0    | 0     |       | 1     | 1     |       | 0    |
| Taper Length (ft)       | 25                                                                                 |       |      | 25    |       |      | 25    |       |       | 25    |       |      |
| Lane Util. Factor       | 0.95                                                                               | 0.95  | 0.95 | 0.95  | 0.95  | 0.95 | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00 |
| Frt                     |                                                                                    | 0.981 |      |       |       |      |       |       | 0.850 |       | 0.935 |      |
| Flt Protected           |                                                                                    |       |      |       | 0.997 |      |       | 0.953 |       | 0.950 |       |      |
| Satd. Flow (prot)       | 0                                                                                  | 3324  | 0    | 0     | 3378  | 0    | 0     | 1641  | 1463  | 1752  | 1725  | 0    |
| Flt Permitted           |                                                                                    | 0.955 |      |       | 0.828 |      |       | 0.713 |       | 0.684 |       |      |
| Satd. Flow (perm)       | 0                                                                                  | 3174  | 0    | 0     | 2805  | 0    | 0     | 1228  | 1463  | 1262  | 1725  | 0    |
| Right Turn on Red       |                                                                                    |       | Yes  |       |       | Yes  |       |       | Yes   |       |       | Yes  |
| Satd. Flow (RTOR)       |                                                                                    | 37    |      |       |       |      |       |       | 104   |       | 10    |      |
| Link Speed (mph)        |                                                                                    | 30    |      |       | 30    |      |       | 25    |       |       | 25    |      |
| Link Distance (ft)      |                                                                                    | 502   |      |       | 407   |      |       | 423   |       |       | 198   |      |
| Travel Time (s)         |                                                                                    | 11.4  |      |       | 9.3   |      |       | 11.5  |       |       | 5.4   |      |
| Peak Hour Factor        | 0.87                                                                               | 0.87  | 0.87 | 0.95  | 0.95  | 0.95 | 0.84  | 0.84  | 0.84  | 0.80  | 0.80  | 0.80 |
| Heavy Vehicles (%)      | 3%                                                                                 | 3%    | 3%   | 3%    | 3%    | 3%   | 3%    | 3%    | 3%    | 3%    | 3%    | 3%   |
| Adj. Flow (vph)         | 3                                                                                  | 832   | 123  | 49    | 720   | 1    | 111   | 2     | 61    | 4     | 13    | 10   |
| Shared Lane Traffic (%) |                                                                                    |       |      |       |       |      |       |       |       |       |       |      |
| Lane Group Flow (vph)   | 0                                                                                  | 958   | 0    | 0     | 770   | 0    | 0     | 113   | 61    | 4     | 23    | 0    |
| Turn Type               | pm+pt                                                                              | NA    |      | Perm  | NA    |      | Perm  | NA    | Perm  | Perm  | NA    |      |
| Protected Phases        | 1                                                                                  | 6     |      |       | 2     |      |       | 4     |       |       | 4     |      |
| Permitted Phases        | 6                                                                                  |       |      | 2     |       |      | 4     |       | 4     | 4     |       |      |
| Detector Phase          | 1                                                                                  | 6     |      | 2     | 2     |      | 4     | 4     | 4     | 4     | 4     |      |
| Switch Phase            |                                                                                    |       |      |       |       |      |       |       |       |       |       |      |
| Minimum Initial (s)     | 3.0                                                                                | 15.0  |      | 15.0  | 15.0  |      | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   |      |
| Minimum Split (s)       | 7.3                                                                                | 21.3  |      | 21.3  | 21.3  |      | 11.9  | 11.9  | 11.9  | 11.9  | 11.9  |      |
| Total Split (s)         | 7.3                                                                                | 55.0  |      | 47.7  | 47.7  |      | 25.0  | 25.0  | 25.0  | 25.0  | 25.0  |      |
| Total Split (%)         | 9.1%                                                                               | 68.8% |      | 59.6% | 59.6% |      | 31.3% | 31.3% | 31.3% | 31.3% | 31.3% |      |
| Yellow Time (s)         | 3.3                                                                                | 5.0   |      | 5.0   | 5.0   |      | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |      |
| All-Red Time (s)        | 1.0                                                                                | 1.3   |      | 1.3   | 1.3   |      | 1.9   | 1.9   | 1.9   | 1.9   | 1.9   |      |
| Lost Time Adjust (s)    |                                                                                    | 0.0   |      |       | 0.0   |      |       | 0.0   | 0.0   | 0.0   | 0.0   |      |
| Total Lost Time (s)     |                                                                                    | 6.3   |      |       | 6.3   |      |       | 4.9   | 4.9   | 4.9   | 4.9   |      |
| Lead/Lag                | Lead                                                                               |       |      | Lag   | Lag   |      |       |       |       |       |       |      |
| Lead-Lag Optimize?      | Yes                                                                                |       |      | Yes   | Yes   |      |       |       |       |       |       |      |
| Recall Mode             | Max                                                                                | C-Max |      | C-Max | C-Max |      | None  | None  | None  | None  | None  |      |
| Act Effect Green (s)    |                                                                                    | 59.8  |      |       | 41.4  |      |       | 11.4  | 11.4  | 11.4  | 11.4  |      |
| Actuated g/C Ratio      |                                                                                    | 0.75  |      |       | 0.52  |      |       | 0.14  | 0.14  | 0.14  | 0.14  |      |
| v/c Ratio               |                                                                                    | 0.40  |      |       | 0.53  |      |       | 0.65  | 0.21  | 0.02  | 0.09  |      |
| Control Delay           |                                                                                    | 4.0   |      |       | 6.9   |      |       | 48.8  | 3.5   | 26.7  | 20.4  |      |
| Queue Delay             |                                                                                    | 0.0   |      |       | 0.0   |      |       | 0.0   | 0.0   | 0.0   | 0.0   |      |
| Total Delay             |                                                                                    | 4.0   |      |       | 6.9   |      |       | 48.8  | 3.5   | 26.7  | 20.4  |      |
| LOS                     |                                                                                    | A     |      |       | A     |      |       | D     | A     | C     | C     |      |
| Approach Delay          |                                                                                    | 4.0   |      |       | 6.9   |      |       | 32.9  |       |       | 21.3  |      |
| Approach LOS            |                                                                                    | A     |      |       | A     |      |       | C     |       |       | C     |      |

# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) and Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  |                                                                                   | 64                                                                                |                                                                                   |                                                                                   | 48                                                                                |                                                                                   |                                                                                    | 54                                                                                  | 0                                                                                   | 2                                                                                   | 6                                                                                   |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 90                                                                                |                                                                                   |                                                                                   | 32                                                                                |                                                                                   |                                                                                    | 91                                                                                  | 8                                                                                   | 9                                                                                   | 21                                                                                  |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 422                                                                               |                                                                                   |                                                                                   | 327                                                                               |                                                                                   |                                                                                    | 343                                                                                 |                                                                                     |                                                                                     | 118                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 250                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 2404                                                                              |                                                                                   |                                                                                   | 1451                                                                              |                                                                                   |                                                                                    | 308                                                                                 | 445                                                                                 | 317                                                                                 | 440                                                                                 |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.40                                                                              |                                                                                   |                                                                                   | 0.53                                                                              |                                                                                   |                                                                                    | 0.37                                                                                | 0.14                                                                                | 0.01                                                                                | 0.05                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 8.0

Intersection LOS: A

Intersection Capacity Utilization 70.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                            |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø4 |
| 7.3 s                                                                                      | 47.7 s                                                                                     | 25 s                                                                                     |
|  Ø6 (R) |                                                                                            |                                                                                          |
| 55 s                                                                                       |                                                                                            |                                                                                          |

# 108: Burroughs Road & Route 58 (Black Rock Turnpike) 2040 Background Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 62                                                                                | 753                                                                               | 12                                                                                | 5                                                                                 | 669                                                                               | 113                                                                               | 14                                                                                 | 59                                                                                  | 7                                                                                   | 118                                                                                 | 51                                                                                  | 47                                                                                  |
| Future Volume (vph)     | 62                                                                                | 753                                                                               | 12                                                                                | 5                                                                                 | 669                                                                               | 113                                                                               | 14                                                                                 | 59                                                                                  | 7                                                                                   | 118                                                                                 | 51                                                                                  | 47                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                 | 16                                                                                  | 12                                                                                  | 12                                                                                  | 16                                                                                  | 12                                                                                  |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   | 0.978                                                                             |                                                                                   |                                                                                    | 0.988                                                                               |                                                                                     |                                                                                     | 0.970                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 0.991                                                                               |                                                                                     |                                                                                     | 0.973                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3335                                                                              | 0                                                                                 | 0                                                                                 | 3282                                                                              | 0                                                                                 | 0                                                                                  | 2027                                                                                | 0                                                                                   | 0                                                                                   | 1954                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.819                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                    | 0.922                                                                               |                                                                                     |                                                                                     | 0.806                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 2743                                                                              | 0                                                                                 | 0                                                                                 | 3118                                                                              | 0                                                                                 | 0                                                                                  | 1886                                                                                | 0                                                                                   | 0                                                                                   | 1619                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 3                                                                                 |                                                                                   |                                                                                   | 39                                                                                |                                                                                   |                                                                                    | 6                                                                                   |                                                                                     |                                                                                     | 18                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 407                                                                               |                                                                                   |                                                                                   | 996                                                                               |                                                                                   |                                                                                    | 466                                                                                 |                                                                                     |                                                                                     | 300                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                   | 22.6                                                                              |                                                                                   |                                                                                    | 12.7                                                                                |                                                                                     |                                                                                     | 8.2                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.80                                                                               | 0.80                                                                                | 0.80                                                                                | 0.83                                                                                | 0.83                                                                                | 0.83                                                                                |
| Heavy Vehicles (%)      | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                 | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  |
| Adj. Flow (vph)         | 72                                                                                | 876                                                                               | 14                                                                                | 5                                                                                 | 697                                                                               | 118                                                                               | 18                                                                                 | 74                                                                                  | 9                                                                                   | 142                                                                                 | 61                                                                                  | 57                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 962                                                                               | 0                                                                                 | 0                                                                                 | 820                                                                               | 0                                                                                 | 0                                                                                  | 101                                                                                 | 0                                                                                   | 0                                                                                   | 260                                                                                 | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                  |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 6                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                  | 4                                                                                   |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 15.0                                                                              | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 9.0                                                                                | 9.0                                                                                 |                                                                                     | 9.0                                                                                 | 9.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 20.6                                                                              | 20.6                                                                              |                                                                                   | 20.6                                                                              | 20.6                                                                              |                                                                                   | 14.4                                                                               | 14.4                                                                                |                                                                                     | 14.4                                                                                | 14.4                                                                                |                                                                                     |
| Total Split (s)         | 51.0                                                                              | 51.0                                                                              |                                                                                   | 51.0                                                                              | 51.0                                                                              |                                                                                   | 29.0                                                                               | 29.0                                                                                |                                                                                     | 29.0                                                                                | 29.0                                                                                |                                                                                     |
| Total Split (%)         | 63.8%                                                                             | 63.8%                                                                             |                                                                                   | 63.8%                                                                             | 63.8%                                                                             |                                                                                   | 36.3%                                                                              | 36.3%                                                                               |                                                                                     | 36.3%                                                                               | 36.3%                                                                               |                                                                                     |
| Yellow Time (s)         | 4.1                                                                               | 4.1                                                                               |                                                                                   | 4.1                                                                               | 4.1                                                                               |                                                                                   | 3.1                                                                                | 3.1                                                                                 |                                                                                     | 3.1                                                                                 | 3.1                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.5                                                                               | 1.5                                                                               |                                                                                   | 1.5                                                                               | 1.5                                                                               |                                                                                   | 2.3                                                                                | 2.3                                                                                 |                                                                                     | 2.3                                                                                 | 2.3                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                    | 5.4                                                                                 |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | C-Max                                                                             | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                               | None                                                                                |                                                                                     | None                                                                                | None                                                                                |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 52.4                                                                              |                                                                                   |                                                                                   | 52.4                                                                              |                                                                                   |                                                                                    | 16.6                                                                                |                                                                                     |                                                                                     | 16.6                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.66                                                                              |                                                                                   |                                                                                   | 0.66                                                                              |                                                                                   |                                                                                    | 0.21                                                                                |                                                                                     |                                                                                     | 0.21                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.54                                                                              |                                                                                   |                                                                                   | 0.40                                                                              |                                                                                   |                                                                                    | 0.26                                                                                |                                                                                     |                                                                                     | 0.74                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                   | 7.4                                                                               |                                                                                   |                                                                                    | 24.7                                                                                |                                                                                     |                                                                                     | 40.0                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 4.8                                                                               |                                                                                   |                                                                                   | 7.4                                                                               |                                                                                   |                                                                                    | 24.7                                                                                |                                                                                     |                                                                                     | 40.0                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 4.8                                                                               |                                                                                   |                                                                                   | 7.4                                                                               |                                                                                   |                                                                                    | 24.7                                                                                |                                                                                     |                                                                                     | 40.0                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 50                                                                                |                                                                                   |                                                                                    | 40                                                                                  |                                                                                     |                                                                                     | 114                                                                                 |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 36                                                                                |                                                                                   |                                                                                   | 161                                                                               |                                                                                   |                                                                                    | 63                                                                                  |                                                                                     |                                                                                     | 156                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 327                                                                               |                                                                                   |                                                                                   | 916                                                                               |                                                                                   |                                                                                    | 386                                                                                 |                                                                                     |                                                                                     | 220                                                                                 |                                                                                     |



# 108: Burroughs Road & Route 58 (Black Rock Turnpike) 2040 Background Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Turn Bay Length (ft)   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)    |                                                                                   | 1797                                                                              |                                                                                   |                                                                                   | 2055                                                                              |                                                                                   |                                                                                    | 560                                                                                 |                                                                                     |                                                                                     | 490                                                                                 |                                                                                     |
| Starvation Cap Reductn |                                                                                   | 59                                                                                |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   | 0.55                                                                              |                                                                                   |                                                                                   | 0.40                                                                              |                                                                                   |                                                                                    | 0.18                                                                                |                                                                                     |                                                                                     | 0.53                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 5 (6%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 11.0

Intersection LOS: B

Intersection Capacity Utilization 77.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)

|                                                                                           |                                                                                         |
|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|  Ø2 (R)  |  Ø4  |
| 51 s                                                                                      | 29 s                                                                                    |
|  Ø6 (R) |  Ø8 |
| 51 s                                                                                      | 29 s                                                                                    |

# 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         | →     | ↖     | ↗    | ↘     | ↙     | ↕     | ↖     | ↗     | ↘    | ↙    | ↕     | ↖     |
|-------------------------|-------|-------|------|-------|-------|-------|-------|-------|------|------|-------|-------|
| Lane Group              | EBT   | EBR   | EBR2 | WBL2  | WBL   | WBT   | NWL2  | NWL   | NWR  | NWR2 | NEL   | NET   |
| Lane Configurations     | ↖     | ↗     |      |       |       | ↕     |       | ↖     |      |      |       | ↕     |
| Traffic Volume (vph)    | 356   | 468   | 6    | 34    | 7     | 347   | 4     | 396   | 2    | 24   | 5     | 0     |
| Future Volume (vph)     | 356   | 468   | 6    | 34    | 7     | 347   | 4     | 396   | 2    | 24   | 5     | 0     |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  | 1900  | 1900  | 1900 | 1900 | 1900  | 1900  |
| Lane Width (ft)         | 12    | 12    | 12   | 12    | 11    | 11    | 12    | 10    | 12   | 12   | 12    | 12    |
| Lane Util. Factor       | 1.00  | 1.00  | 1.00 | 0.95  | 0.95  | 0.95  | 0.95  | 0.97  | 0.95 | 0.95 | 1.00  | 1.00  |
| Frt                     |       | 0.850 |      |       |       |       |       | 0.991 |      |      |       | 0.939 |
| Flt Protected           |       |       |      |       |       | 0.995 |       | 0.955 |      |      |       | 0.973 |
| Satd. Flow (prot)       | 1827  | 1553  | 0    | 0     | 0     | 3339  | 0     | 3131  | 0    | 0    | 0     | 1669  |
| Flt Permitted           |       |       |      |       |       | 0.871 |       | 0.947 |      |      |       |       |
| Satd. Flow (perm)       | 1827  | 1553  | 0    | 0     | 0     | 2923  | 0     | 3104  | 0    | 0    | 0     | 1715  |
| Right Turn on Red       |       |       | Yes  |       |       |       |       |       |      | Yes  |       |       |
| Satd. Flow (RTOR)       |       | 63    |      |       |       |       |       | 169   |      |      |       |       |
| Link Speed (mph)        | 30    |       |      |       |       | 30    |       | 30    |      |      |       | 25    |
| Link Distance (ft)      | 996   |       |      |       |       | 549   |       | 218   |      |      |       | 653   |
| Travel Time (s)         | 22.6  |       |      |       |       | 12.5  |       | 5.0   |      |      |       | 17.8  |
| Peak Hour Factor        | 0.90  | 0.90  | 0.90 | 0.90  | 0.90  | 0.90  | 0.95  | 0.95  | 0.95 | 0.95 | 0.80  | 0.80  |
| Heavy Vehicles (%)      | 4%    | 4%    | 4%   | 4%    | 4%    | 4%    | 4%    | 4%    | 4%   | 4%   | 4%    | 4%    |
| Adj. Flow (vph)         | 396   | 520   | 7    | 38    | 8     | 386   | 4     | 417   | 2    | 25   | 6     | 0     |
| Shared Lane Traffic (%) |       |       |      |       |       |       |       |       |      |      |       |       |
| Lane Group Flow (vph)   | 396   | 527   | 0    | 0     | 0     | 432   | 0     | 448   | 0    | 0    | 0     | 11    |
| Turn Type               | NA    | pm+ov |      | Perm  | Perm  | NA    | D.Pm  | Prot  |      |      | Perm  | NA    |
| Protected Phases        | 2     | 4     |      |       |       | 2     |       | 4     |      |      |       | 5     |
| Permitted Phases        |       | 2     |      | 2     | 2     |       | 4     |       |      |      | 5     |       |
| Detector Phase          | 2     | 4     |      | 2     | 2     | 2     | 4     | 4     |      |      | 5     | 5     |
| Switch Phase            |       |       |      |       |       |       |       |       |      |      |       |       |
| Minimum Initial (s)     | 15.0  | 9.0   |      | 15.0  | 15.0  | 15.0  | 9.0   | 9.0   |      |      | 5.0   | 5.0   |
| Minimum Split (s)       | 22.8  | 15.4  |      | 22.8  | 22.8  | 22.8  | 15.4  | 15.4  |      |      | 12.6  | 12.6  |
| Total Split (s)         | 41.0  | 26.0  |      | 41.0  | 41.0  | 41.0  | 26.0  | 26.0  |      |      | 13.0  | 13.0  |
| Total Split (%)         | 51.3% | 32.5% |      | 51.3% | 51.3% | 51.3% | 32.5% | 32.5% |      |      | 16.3% | 16.3% |
| Yellow Time (s)         | 4.1   | 3.3   |      | 4.1   | 4.1   | 4.1   | 3.3   | 3.3   |      |      | 3.3   | 3.3   |
| All-Red Time (s)        | 3.7   | 3.1   |      | 3.7   | 3.7   | 3.7   | 3.1   | 3.1   |      |      | 4.3   | 4.3   |
| Lost Time Adjust (s)    | 0.0   | 0.0   |      |       |       | 0.0   |       | 0.0   |      |      |       | 0.0   |
| Total Lost Time (s)     | 7.8   | 6.4   |      |       |       | 7.8   |       | 6.4   |      |      |       | 7.6   |
| Lead/Lag                |       |       |      |       |       |       |       |       |      |      |       |       |
| Lead-Lag Optimize?      |       |       |      |       |       |       |       |       |      |      |       |       |
| Recall Mode             | C-Min | None  |      | C-Min | C-Min | C-Min | None  | None  |      |      | None  | None  |
| Act Effect Green (s)    | 48.2  | 72.0  |      |       |       | 48.2  |       | 12.2  |      |      |       | 5.4   |
| Actuated g/C Ratio      | 0.60  | 0.90  |      |       |       | 0.60  |       | 0.15  |      |      |       | 0.07  |
| v/c Ratio               | 0.36  | 0.38  |      |       |       | 0.25  |       | 0.73  |      |      |       | 0.10  |
| Control Delay           | 6.7   | 1.7   |      |       |       | 10.0  |       | 26.7  |      |      |       | 36.6  |
| Queue Delay             | 0.0   | 0.0   |      |       |       | 0.0   |       | 0.0   |      |      |       | 0.0   |
| Total Delay             | 6.7   | 1.7   |      |       |       | 10.0  |       | 26.7  |      |      |       | 36.6  |
| LOS                     | A     | A     |      |       |       | A     |       | C     |      |      |       | D     |
| Approach Delay          | 3.9   |       |      |       |       | 10.0  |       | 26.7  |      |      |       | 36.6  |
| Approach LOS            | A     |       |      |       |       | A     |       | C     |      |      |       | D     |
| Queue Length 50th (ft)  | 43    | 0     |      |       |       | 38    |       | 67    |      |      |       | 5     |
| Queue Length 95th (ft)  | 148   | 70    |      |       |       | 106   |       | 108   |      |      |       | 18    |
| Internal Link Dist (ft) | 916   |       |      |       |       | 469   |       | 138   |      |      |       | 573   |

# 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         | ↖    | ↗     | ↘     | ↙    |
|-------------------------|------|-------|-------|------|
| Lane Group              | NER2 | SWL   | SWT   | SWR  |
| Lane Configurations     |      |       | ↔     |      |
| Traffic Volume (vph)    | 4    | 5     | 0     | 6    |
| Future Volume (vph)     | 4    | 5     | 0     | 6    |
| Ideal Flow (vphpl)      | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12   | 15    | 12    | 12   |
| Lane Util. Factor       | 1.00 | 1.00  | 1.00  | 1.00 |
| Frt                     |      |       | 0.923 |      |
| Flt Protected           |      |       | 0.979 |      |
| Satd. Flow (prot)       | 0    | 0     | 1651  | 0    |
| Flt Permitted           |      |       |       |      |
| Satd. Flow (perm)       | 0    | 0     | 1686  | 0    |
| Right Turn on Red       | No   |       |       | No   |
| Satd. Flow (RTOR)       |      |       |       |      |
| Link Speed (mph)        |      |       | 25    |      |
| Link Distance (ft)      |      |       | 695   |      |
| Travel Time (s)         |      |       | 19.0  |      |
| Peak Hour Factor        | 0.80 | 0.80  | 0.80  | 0.80 |
| Heavy Vehicles (%)      | 4%   | 4%    | 4%    | 4%   |
| Adj. Flow (vph)         | 5    | 6     | 0     | 8    |
| Shared Lane Traffic (%) |      |       |       |      |
| Lane Group Flow (vph)   | 0    | 0     | 14    | 0    |
| Turn Type               |      | Perm  | NA    |      |
| Protected Phases        |      |       | 5     |      |
| Permitted Phases        |      | 5     |       |      |
| Detector Phase          |      | 5     | 5     |      |
| Switch Phase            |      |       |       |      |
| Minimum Initial (s)     |      | 5.0   | 5.0   |      |
| Minimum Split (s)       |      | 12.6  | 12.6  |      |
| Total Split (s)         |      | 13.0  | 13.0  |      |
| Total Split (%)         |      | 16.3% | 16.3% |      |
| Yellow Time (s)         |      | 3.3   | 3.3   |      |
| All-Red Time (s)        |      | 4.3   | 4.3   |      |
| Lost Time Adjust (s)    |      |       | 0.0   |      |
| Total Lost Time (s)     |      |       | 7.6   |      |
| Lead/Lag                |      |       |       |      |
| Lead-Lag Optimize?      |      |       |       |      |
| Recall Mode             |      | None  | None  |      |
| Act Effect Green (s)    |      |       | 5.4   |      |
| Actuated g/C Ratio      |      |       | 0.07  |      |
| v/c Ratio               |      |       | 0.12  |      |
| Control Delay           |      |       | 37.3  |      |
| Queue Delay             |      |       | 0.0   |      |
| Total Delay             |      |       | 37.3  |      |
| LOS                     |      |       | D     |      |
| Approach Delay          |      |       | 37.3  |      |
| Approach LOS            |      |       | D     |      |
| Queue Length 50th (ft)  |      |       | 7     |      |
| Queue Length 95th (ft)  |      |       | 21    |      |
| Internal Link Dist (ft) |      |       | 615   |      |

109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)

Timing Plan: Weekday Midday P

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBT                                                                               | EBR                                                                               | EBR2                                                                              | WBL2                                                                              | WBL                                                                               | WBT                                                                               | NWL2                                                                               | NWL                                                                                 | NWR                                                                                 | NWR2                                                                                | NEL                                                                                 | NET                                                                                 |
| Turn Bay Length (ft)   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)    | 1100                                                                              | 1436                                                                              |                                                                                   |                                                                                   |                                                                                   | 1759                                                                              |                                                                                    | 888                                                                                 |                                                                                     |                                                                                     |                                                                                     | 120                                                                                 |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     | 0                                                                                   |
| Reduced v/c Ratio      | 0.36                                                                              | 0.37                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.25                                                                              |                                                                                    | 0.50                                                                                |                                                                                     |                                                                                     |                                                                                     | 0.09                                                                                |

Intersection Summary

Area Type:

Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 32 (40%), Referenced to phase 2:EBWB, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

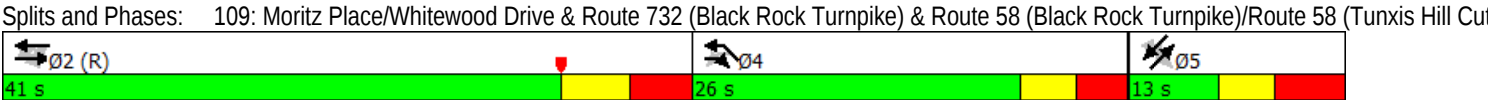
Intersection Signal Delay: 11.4

Intersection LOS: B

Intersection Capacity Utilization 72.3%

ICU Level of Service C

Analysis Period (min) 15



|                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                        |  |  |  |  |
| Lane Group             | NER2                                                                              | SWL                                                                               | SWT                                                                               | SWR                                                                               |
| Turn Bay Length (ft)   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Base Capacity (vph)    | 118                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Starvation Cap Reductn | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Storage Cap Reductn    | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Reduced v/c Ratio      | 0.12                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

201: Tunxis Hill Road & Route 58 (Tunxis Hill Cutoff) 2040 Background Optimized Conditions  
 Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         | →     | ↘    | ↙    | ←     | ↖     | ↗     |
|-------------------------|-------|------|------|-------|-------|-------|
| Lane Group              | EBT   | EBR  | WBL  | WBT   | NBL   | NBR   |
| Lane Configurations     | ↑↑    |      |      | ↑     | ↑     | ↑     |
| Traffic Volume (vph)    | 440   | 11   | 36   | 411   | 3     | 61    |
| Future Volume (vph)     | 440   | 11   | 36   | 411   | 3     | 61    |
| Ideal Flow (vphpl)      | 1900  | 1900 | 1900 | 1900  | 1900  | 1900  |
| Lane Width (ft)         | 11    | 12   | 12   | 11    | 10    | 10    |
| Storage Length (ft)     |       | 0    | 0    |       | 0     | 50    |
| Storage Lanes           |       | 0    | 0    |       | 1     | 1     |
| Taper Length (ft)       |       |      | 25   |       | 25    |       |
| Lane Util. Factor       | 0.95  | 0.95 | 1.00 | 1.00  | 1.00  | 1.00  |
| Frt                     | 0.996 |      |      |       |       | 0.850 |
| Flt Protected           |       |      |      | 0.996 | 0.950 |       |
| Satd. Flow (prot)       | 3374  | 0    | 0    | 1776  | 1636  | 1463  |
| Flt Permitted           |       |      |      | 0.996 | 0.950 |       |
| Satd. Flow (perm)       | 3374  | 0    | 0    | 1776  | 1636  | 1463  |
| Link Speed (mph)        | 30    |      |      | 30    | 25    |       |
| Link Distance (ft)      | 1095  |      |      | 214   | 782   |       |
| Travel Time (s)         | 24.9  |      |      | 4.9   | 21.3  |       |
| Peak Hour Factor        | 0.85  | 0.85 | 0.86 | 0.86  | 0.88  | 0.88  |
| Heavy Vehicles (%)      | 3%    | 3%   | 3%   | 3%    | 3%    | 3%    |
| Adj. Flow (vph)         | 518   | 13   | 42   | 478   | 3     | 69    |
| Shared Lane Traffic (%) |       |      |      |       |       |       |
| Lane Group Flow (vph)   | 531   | 0    | 0    | 520   | 3     | 69    |
| Sign Control            | Free  |      |      | Free  | Stop  |       |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 49.5% ICU Level of Service A

Analysis Period (min) 15



Intersection

Int Delay, s/veh 1

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↑↑   |      |      | ↑    | ↑    | ↑    |
| Traffic Vol, veh/h       | 440  | 11   | 36   | 411  | 3    | 61   |
| Future Vol, veh/h        | 440  | 11   | 36   | 411  | 3    | 61   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | 0    | 50   |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 85   | 85   | 86   | 86   | 88   | 88   |
| Heavy Vehicles, %        | 3    | 3    | 3    | 3    | 3    | 3    |
| Mvmt Flow                | 518  | 13   | 42   | 478  | 3    | 69   |

| Major/Minor          | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0      | 0      | 531    |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Critical Hdwy        | -      | -      | 4.145  |
| Critical Hdwy Stg 1  | -      | -      | -      |
| Critical Hdwy Stg 2  | -      | -      | -      |
| Follow-up Hdwy       | -      | -      | 2.2285 |
| Pot Cap-1 Maneuver   | -      | -      | 1028   |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | -      | -      | 1028   |
| Mov Cap-2 Maneuver   | -      | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |

| Approach             | EB | WB  | NB |
|----------------------|----|-----|----|
| HCM Control Delay, s | 0  | 0.7 | 11 |
| HCM LOS              |    |     | B  |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | 211   | 731   | -   | -   | 1028  | -   |
| HCM Lane V/C Ratio    | 0.016 | 0.095 | -   | -   | 0.041 | -   |
| HCM Control Delay (s) | 22.3  | 10.4  | -   | -   | 8.7   | 0   |
| HCM Lane LOS          | C     | B     | -   | -   | A     | A   |
| HCM 95th %tile Q(veh) | 0     | 0.3   | -   | -   | 0.1   | -   |

# 202: Route 732 (Black Rock Turnpike) & Judd Street 2040 Background Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (vph)    | 21                                                                                | 65                                                                                | 49                                                                                | 406                                                                               | 484                                                                               | 28                                                                                |
| Future Volume (vph)     | 21                                                                                | 65                                                                                | 49                                                                                | 406                                                                               | 484                                                                               | 28                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Storage Length (ft)     | 0                                                                                 | 0                                                                                 | 25                                                                                |                                                                                   |                                                                                   | 0                                                                                 |
| Storage Lanes           | 1                                                                                 | 0                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 25                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.898                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.993                                                                             |                                                                                   |
| Flt Protected           | 0.988                                                                             |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1820                                                                              | 0                                                                                 | 0                                                                                 | 3421                                                                              | 1797                                                                              | 0                                                                                 |
| Flt Permitted           | 0.988                                                                             |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1820                                                                              | 0                                                                                 | 0                                                                                 | 3421                                                                              | 1797                                                                              | 0                                                                                 |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 586                                                                               |                                                                                   |                                                                                   | 395                                                                               | 218                                                                               |                                                                                   |
| Travel Time (s)         | 16.0                                                                              |                                                                                   |                                                                                   | 9.0                                                                               | 5.0                                                                               |                                                                                   |
| Peak Hour Factor        | 0.90                                                                              | 0.90                                                                              | 0.94                                                                              | 0.94                                                                              | 0.87                                                                              | 0.87                                                                              |
| Heavy Vehicles (%)      | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                |
| Adj. Flow (vph)         | 23                                                                                | 72                                                                                | 52                                                                                | 432                                                                               | 556                                                                               | 32                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 95                                                                                | 0                                                                                 | 0                                                                                 | 484                                                                               | 588                                                                               | 0                                                                                 |
| Sign Control            | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |

## Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 55.0% ICU Level of Service A

Analysis Period (min) 15

202: Route 732 (Black Rock Turnpike) & Judd Street 2040 Background Optimized Conditions  
 HCM 2010 TWSC

Timing Plan: Weekday Midday P

Intersection

Int Delay, s/veh 1.8

| Movement                 | EBL                                                                               | EBR  | NBL  | NBT                                                                               | SBT                                                                               | SBR  |
|--------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |  |      |      |  |  |      |
| Traffic Vol, veh/h       | 21                                                                                | 65   | 49   | 406                                                                               | 484                                                                               | 28   |
| Future Vol, veh/h        | 21                                                                                | 65   | 49   | 406                                                                               | 484                                                                               | 28   |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0    | 0                                                                                 | 0                                                                                 | 0    |
| Sign Control             | Stop                                                                              | Stop | Free | Free                                                                              | Free                                                                              | Free |
| RT Channelized           | -                                                                                 | None | -    | None                                                                              | -                                                                                 | None |
| Storage Length           | 0                                                                                 | -    | 25   | -                                                                                 | -                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 90                                                                                | 90   | 94   | 94                                                                                | 87                                                                                | 87   |
| Heavy Vehicles, %        | 5                                                                                 | 5    | 5    | 5                                                                                 | 5                                                                                 | 5    |
| Mvmt Flow                | 23                                                                                | 72   | 52   | 432                                                                               | 556                                                                               | 32   |

| Major/Minor          | Minor2 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 892    | 572    | 589    |
| Stage 1              | 572    | -      | -      |
| Stage 2              | 320    | -      | -      |
| Critical Hdwy        | 6.675  | 6.275  | 4.175  |
| Critical Hdwy Stg 1  | 5.475  | -      | -      |
| Critical Hdwy Stg 2  | 5.875  | -      | -      |
| Follow-up Hdwy       | 3.5475 | 3.3475 | 2.2475 |
| Pot Cap-1 Maneuver   | 292    | 512    | 967    |
| Stage 1              | 556    | -      | -      |
| Stage 2              | 702    | -      | -      |
| Platoon blocked, %   |        |        |        |
| Mov Cap-1 Maneuver   | 271    | 512    | 967    |
| Mov Cap-2 Maneuver   | 271    | -      | -      |
| Stage 1              | 556    | -      | -      |
| Stage 2              | 652    | -      | -      |

| Approach             | EB | NB  | SB |
|----------------------|----|-----|----|
| HCM Control Delay, s | 16 | 1.2 | 0  |
| HCM LOS              | C  |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 967   | -   | 421   | -   | -   |
| HCM Lane V/C Ratio    | 0.054 | -   | 0.227 | -   | -   |
| HCM Control Delay (s) | 8.9   | 0.3 | 16    | -   | -   |
| HCM Lane LOS          | A     | A   | C     | -   | -   |
| HCM 95th %tile Q(veh) | 0.2   | -   | 0.9   | -   | -   |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike Interchange Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 10                                                                                | 0                                                                                 | 1                                                                                 | 54                                                                                | 4                                                                                 | 57                                                                                | 4                                                                                  | 802                                                                                 | 112                                                                                 | 128                                                                                 | 975                                                                                 | 5                                                                                   |
| Future Volume (vph)     | 10                                                                                | 0                                                                                 | 1                                                                                 | 54                                                                                | 4                                                                                 | 57                                                                                | 4                                                                                  | 802                                                                                 | 112                                                                                 | 128                                                                                 | 975                                                                                 | 5                                                                                   |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                 | 13                                                                                  | 12                                                                                  | 12                                                                                  | 13                                                                                  | 12                                                                                  |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.990                                                                             |                                                                                   |                                                                                   | 0.932                                                                             |                                                                                   |                                                                                    | 0.983                                                                               |                                                                                     |                                                                                     | 0.999                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.956                                                                             |                                                                                   |                                                                                   | 0.977                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.994                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 1998                                                                              | 0                                                                                 | 0                                                                                 | 1922                                                                              | 0                                                                                 | 0                                                                                  | 1892                                                                                | 0                                                                                   | 0                                                                                   | 1911                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.689                                                                             |                                                                                   |                                                                                   | 0.844                                                                             |                                                                                   |                                                                                    | 0.996                                                                               |                                                                                     |                                                                                     | 0.780                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 1440                                                                              | 0                                                                                 | 0                                                                                 | 1661                                                                              | 0                                                                                 | 0                                                                                  | 1885                                                                                | 0                                                                                   | 0                                                                                   | 1500                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 38                                                                                |                                                                                   |                                                                                   | 53                                                                                |                                                                                   |                                                                                    | 29                                                                                  |                                                                                     |                                                                                     | 1                                                                                   |                                                                                     |
| Link Speed (mph)        |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 35                                                                                  |                                                                                     |                                                                                     | 35                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 378                                                                               |                                                                                   |                                                                                   | 442                                                                               |                                                                                   |                                                                                    | 1898                                                                                |                                                                                     |                                                                                     | 522                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 10.3                                                                              |                                                                                   |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                    | 37.0                                                                                |                                                                                     |                                                                                     | 10.2                                                                                |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                |
| Adj. Flow (vph)         | 13                                                                                | 0                                                                                 | 1                                                                                 | 59                                                                                | 4                                                                                 | 63                                                                                | 4                                                                                  | 872                                                                                 | 122                                                                                 | 147                                                                                 | 1121                                                                                | 6                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 14                                                                                | 0                                                                                 | 0                                                                                 | 126                                                                               | 0                                                                                 | 0                                                                                  | 998                                                                                 | 0                                                                                   | 0                                                                                   | 1274                                                                                | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                    | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Permitted Phases        | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   | 2                                                                                  |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 4                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |                                                                                   | 2                                                                                  | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 15.0                                                                               | 15.0                                                                                |                                                                                     | 15.0                                                                                | 15.0                                                                                |                                                                                     |
| Minimum Split (s)       | 11.7                                                                              | 11.7                                                                              |                                                                                   | 11.7                                                                              | 11.7                                                                              |                                                                                   | 20.6                                                                               | 20.6                                                                                |                                                                                     | 20.6                                                                                | 20.6                                                                                |                                                                                     |
| Total Split (s)         | 11.7                                                                              | 11.7                                                                              |                                                                                   | 11.7                                                                              | 11.7                                                                              |                                                                                   | 63.3                                                                               | 63.3                                                                                |                                                                                     | 63.3                                                                                | 63.3                                                                                |                                                                                     |
| Total Split (%)         | 15.6%                                                                             | 15.6%                                                                             |                                                                                   | 15.6%                                                                             | 15.6%                                                                             |                                                                                   | 84.4%                                                                              | 84.4%                                                                               |                                                                                     | 84.4%                                                                               | 84.4%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.3                                                                               | 3.3                                                                               |                                                                                   | 3.3                                                                               | 3.3                                                                               |                                                                                   | 4.0                                                                                | 4.0                                                                                 |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.4                                                                               | 1.4                                                                               |                                                                                   | 1.4                                                                               | 1.4                                                                               |                                                                                   | 1.6                                                                                | 1.6                                                                                 |                                                                                     | 1.6                                                                                 | 1.6                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                    | 5.6                                                                                 |                                                                                     |                                                                                     | 5.6                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              |                                                                                   | C-Min                                                                              | C-Min                                                                               |                                                                                     | C-Min                                                                               | C-Min                                                                               |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                    | 61.2                                                                                |                                                                                     |                                                                                     | 61.2                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.09                                                                              |                                                                                   |                                                                                   | 0.09                                                                              |                                                                                   |                                                                                    | 0.82                                                                                |                                                                                     |                                                                                     | 0.82                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.08                                                                              |                                                                                   |                                                                                   | 0.62                                                                              |                                                                                   |                                                                                    | 0.65                                                                                |                                                                                     |                                                                                     | 1.04                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 4.1                                                                               |                                                                                   |                                                                                   | 35.1                                                                              |                                                                                   |                                                                                    | 2.7                                                                                 |                                                                                     |                                                                                     | 50.5                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 4.1                                                                               |                                                                                   |                                                                                   | 35.1                                                                              |                                                                                   |                                                                                    | 2.7                                                                                 |                                                                                     |                                                                                     | 50.5                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 4.1                                                                               |                                                                                   |                                                                                   | 35.1                                                                              |                                                                                   |                                                                                    | 2.7                                                                                 |                                                                                     |                                                                                     | 50.5                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 33                                                                                |                                                                                   |                                                                                    | 85                                                                                  |                                                                                     |                                                                                     | ~691                                                                                |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | #101                                                                              |                                                                                   |                                                                                    | 82                                                                                  |                                                                                     |                                                                                     | #882                                                                                |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 298                                                                               |                                                                                   |                                                                                   | 362                                                                               |                                                                                   |                                                                                    | 1818                                                                                |                                                                                     |                                                                                     | 442                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

Timing Plan: Weekday PM Peak

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Base Capacity (vph)    |                                                                                   | 168                                                                               |                                                                                   |                                                                                   | 203                                                                               |                                                                                   |                                                                                    | 1542                                                                                |                                                                                     |                                                                                     | 1223                                                                                |                                                                                     |
| Starvation Cap Reductn |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   | 0.08                                                                              |                                                                                   |                                                                                   | 0.62                                                                              |                                                                                   |                                                                                    | 0.65                                                                                |                                                                                     |                                                                                     | 1.04                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 8 (11%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.04

Intersection Signal Delay: 29.6

Intersection LOS: C

Intersection Capacity Utilization 127.4%

ICU Level of Service H

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

|                                                                                            |                                                                                          |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø2 (R) |  Ø4 |
| 63.3 s                                                                                     | 11.7 s                                                                                   |
|  Ø6 (R) |  Ø8 |
| 63.3 s                                                                                     | 11.7 s                                                                                   |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive Background Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |    |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3 |
| Lane Configurations     |  |  |  |  |  |  |    |
| Traffic Volume (vph)    | 178                                                                               | 344                                                                               | 135                                                                               | 808                                                                               | 946                                                                               | 88                                                                                |    |
| Future Volume (vph)     | 178                                                                               | 344                                                                               | 135                                                                               | 808                                                                               | 946                                                                               | 88                                                                                |    |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |    |
| Lane Width (ft)         | 10                                                                                | 10                                                                                | 11                                                                                | 11                                                                                | 12                                                                                | 12                                                                                |    |
| Storage Length (ft)     | 0                                                                                 | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   | 0                                                                                 |    |
| Storage Lanes           | 1                                                                                 | 1                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |    |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |    |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              |    |
| Frt                     |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.987                                                                             |                                                                                   |    |
| Flt Protected           | 0.950                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |    |
| Satd. Flow (prot)       | 1652                                                                              | 1478                                                                              | 1711                                                                              | 1801                                                                              | 3493                                                                              | 0                                                                                 |    |
| Flt Permitted           | 0.950                                                                             |                                                                                   | 0.162                                                                             |                                                                                   |                                                                                   |                                                                                   |    |
| Satd. Flow (perm)       | 1652                                                                              | 1478                                                                              | 292                                                                               | 1801                                                                              | 3493                                                                              | 0                                                                                 |    |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |    |
| Satd. Flow (RTOR)       |                                                                                   | 316                                                                               |                                                                                   |                                                                                   | 14                                                                                |                                                                                   |    |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 35                                                                                |                                                                                   |    |
| Link Distance (ft)      | 445                                                                               |                                                                                   |                                                                                   | 510                                                                               | 341                                                                               |                                                                                   |    |
| Travel Time (s)         | 12.1                                                                              |                                                                                   |                                                                                   | 11.6                                                                              | 6.6                                                                               |                                                                                   |    |
| Peak Hour Factor        | 0.90                                                                              | 0.90                                                                              | 0.88                                                                              | 0.88                                                                              | 0.95                                                                              | 0.95                                                                              |    |
| Adj. Flow (vph)         | 198                                                                               | 382                                                                               | 153                                                                               | 918                                                                               | 996                                                                               | 93                                                                                |    |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |    |
| Lane Group Flow (vph)   | 198                                                                               | 382                                                                               | 153                                                                               | 918                                                                               | 1089                                                                              | 0                                                                                 |    |
| Turn Type               | Prot                                                                              | Perm                                                                              | pm+pt                                                                             | NA                                                                                | NA                                                                                |                                                                                   |    |
| Protected Phases        | 4                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 | 2                                                                                 | 3                                                                                 |    |
| Permitted Phases        |                                                                                   | 4                                                                                 | 6                                                                                 |                                                                                   |                                                                                   |                                                                                   |    |
| Detector Phase          | 4                                                                                 | 4                                                                                 | 1                                                                                 | 6                                                                                 | 2                                                                                 |                                                                                   |    |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |    |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               | 5.0                                                                               | 15.0                                                                              | 15.0                                                                              | 7.0                                                                               |    |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              | 9.2                                                                               | 21.9                                                                              | 21.9                                                                              | 22.0                                                                              |    |
| Total Split (s)         | 13.0                                                                              | 13.0                                                                              | 9.2                                                                               | 40.0                                                                              | 30.8                                                                              | 22.0                                                                              |    |
| Total Split (%)         | 17.3%                                                                             | 17.3%                                                                             | 12.3%                                                                             | 53.3%                                                                             | 41.1%                                                                             | 29%                                                                               |    |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               | 3.2                                                                               | 4.9                                                                               | 4.9                                                                               | 4.0                                                                               |    |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 2.0                                                                               | 2.0                                                                               | 0.0                                                                               |    |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |    |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               | 4.2                                                                               | 6.9                                                                               | 6.9                                                                               |                                                                                   |    |
| Lead/Lag                | Lag                                                                               | Lag                                                                               | Lead                                                                              |                                                                                   | Lag                                                                               | Lead                                                                              |    |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |    |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                             | C-Max                                                                             | None                                                                              |    |
| Act Effct Green (s)     | 16.1                                                                              | 16.1                                                                              | 50.7                                                                              | 48.0                                                                              | 36.2                                                                              |                                                                                   |    |
| Actuated g/C Ratio      | 0.21                                                                              | 0.21                                                                              | 0.68                                                                              | 0.64                                                                              | 0.48                                                                              |                                                                                   |    |
| v/c Ratio               | 0.56                                                                              | 0.68                                                                              | 0.45                                                                              | 0.80                                                                              | 0.64                                                                              |                                                                                   |    |
| Control Delay           | 32.4                                                                              | 12.3                                                                              | 12.3                                                                              | 15.1                                                                              | 12.4                                                                              |                                                                                   |    |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |    |
| Total Delay             | 32.4                                                                              | 12.3                                                                              | 12.3                                                                              | 15.1                                                                              | 12.4                                                                              |                                                                                   |    |
| LOS                     | C                                                                                 | B                                                                                 | B                                                                                 | B                                                                                 | B                                                                                 |                                                                                   |    |
| Approach Delay          | 19.2                                                                              |                                                                                   |                                                                                   | 14.7                                                                              | 12.4                                                                              |                                                                                   |    |
| Approach LOS            | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 | B                                                                                 |                                                                                   |    |
| Queue Length 50th (ft)  | 83                                                                                | 26                                                                                | 15                                                                                | 149                                                                               | 136                                                                               |                                                                                   |    |



# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive Background Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |    |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3 |
| Queue Length 95th (ft)  | 137                                                                               | 104                                                                               | m64                                                                               | #305                                                                              | m183                                                                              |                                                                                   |    |
| Internal Link Dist (ft) | 365                                                                               |                                                                                   |                                                                                   | 430                                                                               | 261                                                                               |                                                                                   |    |
| Turn Bay Length (ft)    |                                                                                   | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   |                                                                                   |    |
| Base Capacity (vph)     | 354                                                                               | 565                                                                               | 341                                                                               | 1152                                                                              | 1691                                                                              |                                                                                   |    |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Reduced v/c Ratio       | 0.56                                                                              | 0.68                                                                              | 0.45                                                                              | 0.80                                                                              | 0.64                                                                              |                                                                                   |    |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 40 (53%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 14.7

Intersection LOS: B

Intersection Capacity Utilization 61.5%

ICU Level of Service B

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

|                                                                                            |                                                                                            |                                                                                        |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø3 |  Ø4 |
| 9.2 s                                                                                      | 30.8 s                                                                                     | 22 s                                                                                   | 13 s                                                                                     |
|  Ø6 (R) |                                                                                            |                                                                                        |                                                                                          |
| 40 s                                                                                       |                                                                                            |                                                                                        |                                                                                          |

# 103: Route 58 (Black Rock Turnpike) & Brookside Drive 2040 Background Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (vph)    | 135                                                                               | 73                                                                                | 40                                                                                | 778                                                                               | 1171                                                                              | 166                                                                               |
| Future Volume (vph)     | 135                                                                               | 73                                                                                | 40                                                                                | 778                                                                               | 1171                                                                              | 166                                                                               |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              |
| Frt                     | 0.953                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.981                                                                             |                                                                                   |
| Flt Protected           | 0.969                                                                             |                                                                                   |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1950                                                                              | 0                                                                                 | 0                                                                                 | 3532                                                                              | 3472                                                                              | 0                                                                                 |
| Flt Permitted           | 0.969                                                                             |                                                                                   |                                                                                   | 0.828                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1950                                                                              | 0                                                                                 | 0                                                                                 | 2930                                                                              | 3472                                                                              | 0                                                                                 |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |
| Satd. Flow (RTOR)       | 32                                                                                |                                                                                   |                                                                                   |                                                                                   | 33                                                                                |                                                                                   |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 347                                                                               |                                                                                   |                                                                                   | 293                                                                               | 336                                                                               |                                                                                   |
| Travel Time (s)         | 9.5                                                                               |                                                                                   |                                                                                   | 6.7                                                                               | 7.6                                                                               |                                                                                   |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              |
| Adj. Flow (vph)         | 169                                                                               | 91                                                                                | 41                                                                                | 802                                                                               | 1207                                                                              | 171                                                                               |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 260                                                                               | 0                                                                                 | 0                                                                                 | 843                                                                               | 1378                                                                              | 0                                                                                 |
| Turn Type               | Prot                                                                              |                                                                                   | pm+pt                                                                             | NA                                                                                | NA                                                                                |                                                                                   |
| Protected Phases        | 4                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                 | 6                                                                                 |                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Detector Phase          | 4                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                 | 6                                                                                 |                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)     | 9.0                                                                               |                                                                                   | 3.0                                                                               | 15.0                                                                              | 15.0                                                                              |                                                                                   |
| Minimum Split (s)       | 13.0                                                                              |                                                                                   | 8.9                                                                               | 20.4                                                                              | 20.4                                                                              |                                                                                   |
| Total Split (s)         | 19.0                                                                              |                                                                                   | 8.9                                                                               | 56.0                                                                              | 47.1                                                                              |                                                                                   |
| Total Split (%)         | 25.3%                                                                             |                                                                                   | 11.9%                                                                             | 74.7%                                                                             | 62.8%                                                                             |                                                                                   |
| Yellow Time (s)         | 3.0                                                                               |                                                                                   | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               |                                                                                   |
| All-Red Time (s)        | 1.0                                                                               |                                                                                   | 1.7                                                                               | 1.2                                                                               | 1.2                                                                               |                                                                                   |
| Lost Time Adjust (s)    | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |
| Total Lost Time (s)     | 4.0                                                                               |                                                                                   |                                                                                   | 5.4                                                                               | 5.4                                                                               |                                                                                   |
| Lead/Lag                |                                                                                   |                                                                                   | Lag                                                                               |                                                                                   | Lead                                                                              |                                                                                   |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   | Yes                                                                               |                                                                                   |
| Recall Mode             | None                                                                              |                                                                                   | None                                                                              | C-Max                                                                             | C-Max                                                                             |                                                                                   |
| Act Effect Green (s)    | 12.6                                                                              |                                                                                   |                                                                                   | 53.0                                                                              | 53.0                                                                              |                                                                                   |
| Actuated g/C Ratio      | 0.17                                                                              |                                                                                   |                                                                                   | 0.71                                                                              | 0.71                                                                              |                                                                                   |
| v/c Ratio               | 0.73                                                                              |                                                                                   |                                                                                   | 0.41                                                                              | 0.56                                                                              |                                                                                   |
| Control Delay           | 38.3                                                                              |                                                                                   |                                                                                   | 4.2                                                                               | 4.3                                                                               |                                                                                   |
| Queue Delay             | 0.0                                                                               |                                                                                   |                                                                                   | 0.2                                                                               | 0.1                                                                               |                                                                                   |
| Total Delay             | 38.4                                                                              |                                                                                   |                                                                                   | 4.4                                                                               | 4.4                                                                               |                                                                                   |
| LOS                     | D                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |
| Approach Delay          | 38.4                                                                              |                                                                                   |                                                                                   | 4.4                                                                               | 4.4                                                                               |                                                                                   |
| Approach LOS            | D                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |
| Queue Length 50th (ft)  | 100                                                                               |                                                                                   |                                                                                   | 38                                                                                | 68                                                                                |                                                                                   |
| Queue Length 95th (ft)  | 147                                                                               |                                                                                   |                                                                                   | 88                                                                                | 137                                                                               |                                                                                   |
| Internal Link Dist (ft) | 267                                                                               |                                                                                   |                                                                                   | 213                                                                               | 256                                                                               |                                                                                   |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

# 103: Route 58 (Black Rock Turnpike) & Brookside Drive 2040 Background Optimized Conditions

Timing Plan: Weekday PM Peak

|                        |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Base Capacity (vph)    | 415                                                                               |                                                                                   |                                                                                   | 2069                                                                              | 2462                                                                              |                                                                                   |
| Starvation Cap Reductn | 0                                                                                 |                                                                                   |                                                                                   | 478                                                                               | 0                                                                                 |                                                                                   |
| Spillback Cap Reductn  | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 206                                                                               |                                                                                   |
| Storage Cap Reductn    | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |
| Reduced v/c Ratio      | 0.63                                                                              |                                                                                   |                                                                                   | 0.53                                                                              | 0.61                                                                              |                                                                                   |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 44 (59%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 8.0

Intersection LOS: A

Intersection Capacity Utilization 70.9%

ICU Level of Service C

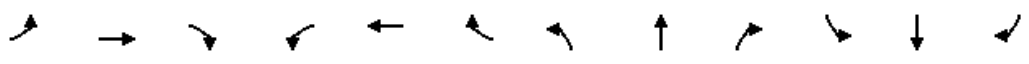
Analysis Period (min) 15

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive

|                                                                                          |                                                                                        |
|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
|  Ø2 (R) |  Ø4 |
| 56 s                                                                                     | 19 s                                                                                   |
|  Ø6 (R) |  Ø5  |
| 47.1 s                                                                                   | 8.9 s                                                                                  |

# 104: Route 58 (Black Rock Turnpike) & Commercial Drive at 2040 B/Feldjield Woods Road Conditions Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |       |       |       |       |       |       |       |      |       |       |      |
|-------------------------|------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|------|
| Lane Group              | EBL                                                                                | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
| Lane Configurations     |                                                                                    |       |       |       |       |       |       |       |      |       |       |      |
| Traffic Volume (vph)    | 29                                                                                 | 18    | 46    | 69    | 15    | 110   | 47    | 706   | 90   | 292   | 918   | 37   |
| Future Volume (vph)     | 29                                                                                 | 18    | 46    | 69    | 15    | 110   | 47    | 706   | 90   | 292   | 918   | 37   |
| Ideal Flow (vphpl)      | 1900                                                                               | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12                                                                                 | 12    | 12    | 12    | 12    | 11    | 12    | 11    | 12   | 12    | 11    | 12   |
| Storage Length (ft)     | 0                                                                                  |       | 0     | 0     |       | 75    | 0     |       | 0    | 0     |       | 0    |
| Storage Lanes           | 0                                                                                  |       | 1     | 0     |       | 1     | 0     |       | 0    | 0     |       | 0    |
| Taper Length (ft)       | 25                                                                                 |       |       | 25    |       |       | 25    |       |      | 25    |       |      |
| Lane Util. Factor       | 1.00                                                                               | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 0.95  | 0.95  | 0.95 | 0.95  | 0.95  | 0.95 |
| Frt                     |                                                                                    |       | 0.850 |       |       | 0.850 |       | 0.984 |      |       | 0.996 |      |
| Flt Protected           |                                                                                    | 0.970 |       |       | 0.961 |       |       | 0.997 |      |       | 0.988 |      |
| Satd. Flow (prot)       | 0                                                                                  | 1807  | 1583  | 0     | 1790  | 1531  | 0     | 3356  | 0    | 0     | 3367  | 0    |
| Flt Permitted           |                                                                                    | 0.764 |       |       | 0.724 |       |       | 0.813 |      |       | 0.602 |      |
| Satd. Flow (perm)       | 0                                                                                  | 1423  | 1583  | 0     | 1349  | 1531  | 0     | 2737  | 0    | 0     | 2051  | 0    |
| Right Turn on Red       |                                                                                    |       | Yes   |       |       | No    |       |       | Yes  |       |       | Yes  |
| Satd. Flow (RTOR)       |                                                                                    |       | 128   |       |       |       |       | 33    |      |       | 12    |      |
| Link Speed (mph)        |                                                                                    | 30    |       |       | 25    |       |       | 30    |      |       | 30    |      |
| Link Distance (ft)      |                                                                                    | 87    |       |       | 499   |       |       | 713   |      |       | 293   |      |
| Travel Time (s)         |                                                                                    | 2.0   |       |       | 13.6  |       |       | 16.2  |      |       | 6.7   |      |
| Peak Hour Factor        | 0.80                                                                               | 0.80  | 0.80  | 0.80  | 0.80  | 0.80  | 0.93  | 0.93  | 0.93 | 0.98  | 0.98  | 0.98 |
| Adj. Flow (vph)         | 36                                                                                 | 23    | 58    | 86    | 19    | 138   | 51    | 759   | 97   | 298   | 937   | 38   |
| Shared Lane Traffic (%) |                                                                                    |       |       |       |       |       |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 0                                                                                  | 59    | 58    | 0     | 105   | 138   | 0     | 907   | 0    | 0     | 1273  | 0    |
| Turn Type               | Perm                                                                               | NA    | Perm  | Perm  | NA    | Perm  | Perm  | NA    |      | pm+pt | NA    |      |
| Protected Phases        |                                                                                    | 4     |       |       | 8     |       |       | 2     |      | 1     | 6     |      |
| Permitted Phases        | 4                                                                                  |       | 4     | 8     |       | 8     | 2     |       |      | 6     |       |      |
| Detector Phase          | 4                                                                                  | 4     | 4     | 8     | 8     | 8     | 2     | 2     |      | 1     | 6     |      |
| Switch Phase            |                                                                                    |       |       |       |       |       |       |       |      |       |       |      |
| Minimum Initial (s)     | 9.0                                                                                | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 15.0  | 15.0  |      | 3.0   | 15.0  |      |
| Minimum Split (s)       | 13.0                                                                               | 13.0  | 13.0  | 13.0  | 13.0  | 13.0  | 20.3  | 20.3  |      | 9.5   | 20.3  |      |
| Total Split (s)         | 13.0                                                                               | 13.0  | 13.0  | 13.0  | 13.0  | 13.0  | 52.5  | 52.5  |      | 9.5   | 62.0  |      |
| Total Split (%)         | 17.3%                                                                              | 17.3% | 17.3% | 17.3% | 17.3% | 17.3% | 70.0% | 70.0% |      | 12.7% | 82.7% |      |
| Yellow Time (s)         | 3.0                                                                                | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 4.3   | 4.3   |      | 4.3   | 4.3   |      |
| All-Red Time (s)        | 1.0                                                                                | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |      | 2.2   | 1.0   |      |
| Lost Time Adjust (s)    |                                                                                    | 0.0   | 0.0   |       | 0.0   | 0.0   |       | 0.0   |      |       | 0.0   |      |
| Total Lost Time (s)     |                                                                                    | 4.0   | 4.0   |       | 4.0   | 4.0   |       | 5.3   |      |       | 5.3   |      |
| Lead/Lag                |                                                                                    |       |       |       |       |       | Lead  | Lead  |      | Lag   |       |      |
| Lead-Lag Optimize?      |                                                                                    |       |       |       |       |       | Yes   | Yes   |      | Yes   |       |      |
| Recall Mode             | None                                                                               | None  | None  | None  | None  | None  | C-Max | C-Max |      | None  | C-Max |      |
| Act Effect Green (s)    |                                                                                    | 9.0   | 9.0   |       | 9.0   | 9.0   |       | 56.7  |      |       | 56.7  |      |
| Actuated g/C Ratio      |                                                                                    | 0.12  | 0.12  |       | 0.12  | 0.12  |       | 0.76  |      |       | 0.76  |      |
| v/c Ratio               |                                                                                    | 0.35  | 0.19  |       | 0.65  | 0.75  |       | 0.44  |      |       | 0.82  |      |
| Control Delay           |                                                                                    | 36.6  | 1.4   |       | 52.6  | 59.3  |       | 3.9   |      |       | 10.1  |      |
| Queue Delay             |                                                                                    | 0.0   | 0.0   |       | 0.0   | 0.0   |       | 0.0   |      |       | 0.4   |      |
| Total Delay             |                                                                                    | 36.6  | 1.4   |       | 52.6  | 59.3  |       | 3.9   |      |       | 10.5  |      |
| LOS                     |                                                                                    | D     | A     |       | D     | E     |       | A     |      |       | B     |      |
| Approach Delay          |                                                                                    | 19.1  |       |       | 56.4  |       |       | 3.9   |      |       | 10.5  |      |
| Approach LOS            |                                                                                    | B     |       |       | E     |       |       | A     |      |       | B     |      |
| Queue Length 50th (ft)  |                                                                                    | 26    | 0     |       | 47    | 63    |       | 57    |      |       | 65    |      |

# 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road Conditions Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         | EBL | EBT  | EBR  | WBL | WBT  | WBR  | NBL | NBT  | NBR | SBL | SBT  | SBR |
|-------------------------|-----|------|------|-----|------|------|-----|------|-----|-----|------|-----|
| Queue Length 95th (ft)  |     | 54   | 0    |     | #96  | #125 |     | 82   |     |     | 213  |     |
| Internal Link Dist (ft) |     | 7    |      |     | 419  |      |     | 633  |     |     | 213  |     |
| Turn Bay Length (ft)    |     |      |      |     |      | 75   |     |      |     |     |      |     |
| Base Capacity (vph)     |     | 170  | 302  |     | 161  | 183  |     | 2077 |     |     | 1553 |     |
| Starvation Cap Reductn  |     | 0    | 0    |     | 0    | 0    |     | 0    |     |     | 51   |     |
| Spillback Cap Reductn   |     | 0    | 0    |     | 0    | 0    |     | 0    |     |     | 0    |     |
| Storage Cap Reductn     |     | 0    | 0    |     | 0    | 0    |     | 0    |     |     | 0    |     |
| Reduced v/c Ratio       |     | 0.35 | 0.19 |     | 0.65 | 0.75 |     | 0.44 |     |     | 0.85 |     |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 52 (69%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 13.0

Intersection LOS: B

Intersection Capacity Utilization 82.2%

ICU Level of Service E

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

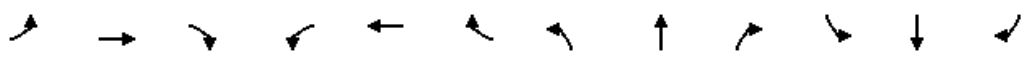
Queue shown is maximum after two cycles.

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road

|                                                                                                      |                                                                                                   |                                                                                                  |
|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
|  Ø2 (R)<br>52.5 s |  Ø1<br>9.5 s |  Ø4<br>13 s |
|  Ø6 (R)<br>62 s   |                                                                                                   |  Ø8<br>13 s |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 520 (Black Rock Turnpike) - Signalized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |                                                                                   |      |                                                                                   |                                                                                   |      |                                                                                    |                                                                                     |      |                                                                                     |                                                                                     |      |
|-------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
| Lane Group              | EBL                                                                                | EBT                                                                               | EBR  | WBL                                                                               | WBT                                                                               | WBR  | NBL                                                                                | NBT                                                                                 | NBR  | SBL                                                                                 | SBT                                                                                 | SBR  |
| Lane Configurations     |   |  |      |  |  |      |  |  |      |  |  |      |
| Traffic Volume (vph)    | 90                                                                                 | 791                                                                               | 157  | 148                                                                               | 625                                                                               | 131  | 232                                                                                | 279                                                                                 | 177  | 189                                                                                 | 270                                                                                 | 44   |
| Future Volume (vph)     | 90                                                                                 | 791                                                                               | 157  | 148                                                                               | 625                                                                               | 131  | 232                                                                                | 279                                                                                 | 177  | 189                                                                                 | 270                                                                                 | 44   |
| Ideal Flow (vphpl)      | 1900                                                                               | 1900                                                                              | 1900 | 1900                                                                              | 1900                                                                              | 1900 | 1900                                                                               | 1900                                                                                | 1900 | 1900                                                                                | 1900                                                                                | 1900 |
| Lane Width (ft)         | 11                                                                                 | 11                                                                                | 12   | 11                                                                                | 12                                                                                | 12   | 11                                                                                 | 11                                                                                  | 12   | 12                                                                                  | 12                                                                                  | 12   |
| Storage Length (ft)     | 200                                                                                |                                                                                   | 0    | 175                                                                               |                                                                                   | 0    | 210                                                                                |                                                                                     | 0    | 170                                                                                 |                                                                                     | 0    |
| Storage Lanes           | 1                                                                                  |                                                                                   | 0    | 1                                                                                 |                                                                                   | 0    | 1                                                                                  |                                                                                     | 0    | 1                                                                                   |                                                                                     | 0    |
| Taper Length (ft)       | 85                                                                                 |                                                                                   |      | 75                                                                                |                                                                                   |      | 100                                                                                |                                                                                     |      | 100                                                                                 |                                                                                     |      |
| Lane Util. Factor       | 1.00                                                                               | 0.95                                                                              | 0.95 | 1.00                                                                              | 0.95                                                                              | 0.95 | 1.00                                                                               | 1.00                                                                                | 1.00 | 1.00                                                                                | 1.00                                                                                | 1.00 |
| Frt                     |                                                                                    | 0.975                                                                             |      |                                                                                   | 0.974                                                                             |      |                                                                                    | 0.942                                                                               |      |                                                                                     | 0.979                                                                               |      |
| Flt Protected           | 0.950                                                                              |                                                                                   |      | 0.950                                                                             |                                                                                   |      | 0.950                                                                              |                                                                                     |      | 0.950                                                                               |                                                                                     |      |
| Satd. Flow (prot)       | 1711                                                                               | 3336                                                                              | 0    | 1711                                                                              | 3447                                                                              | 0    | 1711                                                                               | 1696                                                                                | 0    | 1770                                                                                | 1824                                                                                | 0    |
| Flt Permitted           | 0.950                                                                              |                                                                                   |      | 0.950                                                                             |                                                                                   |      | 0.233                                                                              |                                                                                     |      | 0.143                                                                               |                                                                                     |      |
| Satd. Flow (perm)       | 1711                                                                               | 3336                                                                              | 0    | 1711                                                                              | 3447                                                                              | 0    | 420                                                                                | 1696                                                                                | 0    | 266                                                                                 | 1824                                                                                | 0    |
| Right Turn on Red       |                                                                                    |                                                                                   | Yes  |                                                                                   |                                                                                   | Yes  |                                                                                    |                                                                                     | Yes  |                                                                                     |                                                                                     | No   |
| Satd. Flow (RTOR)       |                                                                                    | 15                                                                                |      |                                                                                   | 16                                                                                |      |                                                                                    | 20                                                                                  |      |                                                                                     |                                                                                     |      |
| Link Speed (mph)        |                                                                                    | 30                                                                                |      |                                                                                   | 30                                                                                |      |                                                                                    | 30                                                                                  |      |                                                                                     | 25                                                                                  |      |
| Link Distance (ft)      |                                                                                    | 436                                                                               |      |                                                                                   | 368                                                                               |      |                                                                                    | 438                                                                                 |      |                                                                                     | 355                                                                                 |      |
| Travel Time (s)         |                                                                                    | 9.9                                                                               |      |                                                                                   | 8.4                                                                               |      |                                                                                    | 10.0                                                                                |      |                                                                                     | 9.7                                                                                 |      |
| Peak Hour Factor        | 0.94                                                                               | 0.94                                                                              | 0.94 | 0.97                                                                              | 0.97                                                                              | 0.97 | 0.89                                                                               | 0.89                                                                                | 0.89 | 0.87                                                                                | 0.87                                                                                | 0.87 |
| Adj. Flow (vph)         | 96                                                                                 | 841                                                                               | 167  | 153                                                                               | 644                                                                               | 135  | 261                                                                                | 313                                                                                 | 199  | 217                                                                                 | 310                                                                                 | 51   |
| Shared Lane Traffic (%) |                                                                                    |                                                                                   |      |                                                                                   |                                                                                   |      |                                                                                    |                                                                                     |      |                                                                                     |                                                                                     |      |
| Lane Group Flow (vph)   | 96                                                                                 | 1008                                                                              | 0    | 153                                                                               | 779                                                                               | 0    | 261                                                                                | 512                                                                                 | 0    | 217                                                                                 | 361                                                                                 | 0    |
| Turn Type               | Prot                                                                               | NA                                                                                |      | Prot                                                                              | NA                                                                                |      | pm+pt                                                                              | NA                                                                                  |      | pm+pt                                                                               | NA                                                                                  |      |
| Protected Phases        | 5                                                                                  | 2                                                                                 |      | 1                                                                                 | 6                                                                                 |      | 7                                                                                  | 4                                                                                   |      | 3                                                                                   | 8                                                                                   |      |
| Permitted Phases        |                                                                                    |                                                                                   |      |                                                                                   |                                                                                   |      | 4                                                                                  |                                                                                     |      | 8                                                                                   |                                                                                     |      |
| Detector Phase          | 5                                                                                  | 2                                                                                 |      | 1                                                                                 | 6                                                                                 |      | 7                                                                                  | 4                                                                                   |      | 3                                                                                   | 8                                                                                   |      |
| Switch Phase            |                                                                                    |                                                                                   |      |                                                                                   |                                                                                   |      |                                                                                    |                                                                                     |      |                                                                                     |                                                                                     |      |
| Minimum Initial (s)     | 5.0                                                                                | 15.0                                                                              |      | 5.0                                                                               | 15.0                                                                              |      | 5.0                                                                                | 10.0                                                                                |      | 5.0                                                                                 | 10.0                                                                                |      |
| Minimum Split (s)       | 9.7                                                                                | 21.6                                                                              |      | 9.7                                                                               | 21.6                                                                              |      | 9.3                                                                                | 16.8                                                                                |      | 9.3                                                                                 | 16.8                                                                                |      |
| Total Split (s)         | 14.2                                                                               | 43.0                                                                              |      | 15.0                                                                              | 43.8                                                                              |      | 19.2                                                                               | 39.0                                                                                |      | 15.0                                                                                | 34.8                                                                                |      |
| Total Split (%)         | 9.8%                                                                               | 29.7%                                                                             |      | 10.3%                                                                             | 30.2%                                                                             |      | 13.2%                                                                              | 26.9%                                                                               |      | 10.3%                                                                               | 24.0%                                                                               |      |
| Yellow Time (s)         | 3.0                                                                                | 4.1                                                                               |      | 3.0                                                                               | 4.1                                                                               |      | 3.3                                                                                | 4.4                                                                                 |      | 3.3                                                                                 | 4.4                                                                                 |      |
| All-Red Time (s)        | 1.7                                                                                | 2.5                                                                               |      | 1.7                                                                               | 2.5                                                                               |      | 1.0                                                                                | 2.4                                                                                 |      | 1.0                                                                                 | 2.4                                                                                 |      |
| Lost Time Adjust (s)    | 0.0                                                                                | 0.0                                                                               |      | 0.0                                                                               | 0.0                                                                               |      | 0.0                                                                                | 0.0                                                                                 |      | 0.0                                                                                 | 0.0                                                                                 |      |
| Total Lost Time (s)     | 4.7                                                                                | 6.6                                                                               |      | 4.7                                                                               | 6.6                                                                               |      | 4.3                                                                                | 6.8                                                                                 |      | 4.3                                                                                 | 6.8                                                                                 |      |
| Lead/Lag                | Lead                                                                               | Lag                                                                               |      | Lead                                                                              | Lag                                                                               |      | Lead                                                                               | Lag                                                                                 |      | Lead                                                                                | Lag                                                                                 |      |
| Lead-Lag Optimize?      | Yes                                                                                | Yes                                                                               |      | Yes                                                                               | Yes                                                                               |      | Yes                                                                                | Yes                                                                                 |      | Yes                                                                                 | Yes                                                                                 |      |
| Recall Mode             | None                                                                               | Min                                                                               |      | None                                                                              | Min                                                                               |      | None                                                                               | None                                                                                |      | None                                                                                | None                                                                                |      |
| Act Effct Green (s)     | 9.2                                                                                | 36.4                                                                              |      | 10.3                                                                              | 37.5                                                                              |      | 49.6                                                                               | 32.2                                                                                |      | 41.2                                                                                | 28.0                                                                                |      |
| Actuated g/C Ratio      | 0.08                                                                               | 0.32                                                                              |      | 0.09                                                                              | 0.33                                                                              |      | 0.44                                                                               | 0.29                                                                                |      | 0.37                                                                                | 0.25                                                                                |      |
| v/c Ratio               | 0.68                                                                               | 0.92                                                                              |      | 0.97                                                                              | 0.67                                                                              |      | 0.73                                                                               | 1.02                                                                                |      | 0.90                                                                                | 0.79                                                                                |      |
| Control Delay           | 74.1                                                                               | 50.3                                                                              |      | 117.2                                                                             | 34.8                                                                              |      | 34.0                                                                               | 84.5                                                                                |      | 63.7                                                                                | 53.3                                                                                |      |
| Queue Delay             | 0.0                                                                                | 0.0                                                                               |      | 0.0                                                                               | 0.0                                                                               |      | 0.0                                                                                | 0.0                                                                                 |      | 0.0                                                                                 | 0.0                                                                                 |      |
| Total Delay             | 74.1                                                                               | 50.3                                                                              |      | 117.2                                                                             | 34.8                                                                              |      | 34.0                                                                               | 84.5                                                                                |      | 63.7                                                                                | 53.3                                                                                |      |
| LOS                     | E                                                                                  | D                                                                                 |      | F                                                                                 | C                                                                                 |      | C                                                                                  | F                                                                                   |      | E                                                                                   | D                                                                                   |      |
| Approach Delay          |                                                                                    | 52.3                                                                              |      |                                                                                   | 48.3                                                                              |      |                                                                                    | 67.5                                                                                |      |                                                                                     | 57.2                                                                                |      |
| Approach LOS            |                                                                                    | D                                                                                 |      |                                                                                   | D                                                                                 |      |                                                                                    | E                                                                                   |      |                                                                                     | E                                                                                   |      |
| Queue Length 50th (ft)  | 68                                                                                 | 361                                                                               |      | 112                                                                               | 247                                                                               |      | 120                                                                                | ~381                                                                                |      | 99                                                                                  | 244                                                                                 |      |



# 105: Route 135 (Stillson Road)/Stillson Road & Route 520 (Black Rock Turnpike) - Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

| Lane Group              | Ø9   |
|-------------------------|------|
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 33.0 |
| Total Split (s)         | 33.0 |
| Total Split (%)         | 23%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)

Timing Plan: Weekday PM Peak

|                         | EBL  | EBT  | EBR | WBL  | WBT  | WBR | NBL  | NBT  | NBR | SBL  | SBT  | SBR |
|-------------------------|------|------|-----|------|------|-----|------|------|-----|------|------|-----|
| Queue Length 95th (ft)  | #143 | #492 |     | #244 | 316  |     | #191 | #581 |     | #227 | #360 |     |
| Internal Link Dist (ft) |      | 356  |     |      | 288  |     |      | 358  |     |      | 275  |     |
| Turn Bay Length (ft)    | 200  |      |     | 175  |      |     | 210  |      |     | 170  |      |     |
| Base Capacity (vph)     | 145  | 1094 |     | 157  | 1163 |     | 357  | 501  |     | 241  | 456  |     |
| Starvation Cap Reductn  | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     |
| Spillback Cap Reductn   | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     |
| Storage Cap Reductn     | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     | 0    | 0    |     |
| Reduced v/c Ratio       | 0.66 | 0.92 |     | 0.97 | 0.67 |     | 0.73 | 1.02 |     | 0.90 | 0.79 |     |

## Intersection Summary

Area Type: Other

Cycle Length: 145

Actuated Cycle Length: 112

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 55.5

Intersection LOS: E

Intersection Capacity Utilization 89.7%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)

|                                                                                        |                                                                                        |                                                                                        |                                                                                         |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø9 |  Ø3 |  Ø4 |
| 15 s                                                                                   | 43 s                                                                                   | 33 s                                                                                   | 15 s                                                                                    | 39 s                                                                                     |
|  Ø5 |  Ø6 |                                                                                        |  Ø7 |  Ø8 |
| 14.2 s                                                                                 | 43.8 s                                                                                 |                                                                                        | 19.2 s                                                                                  | 34.8 s                                                                                   |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø9 |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza 2040 Daily & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

| Lane Group              | EBL   | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
|-------------------------|-------|-------|------|-------|-------|------|-------|-------|-------|-------|-------|-------|
| Lane Configurations     |       | ↔     |      |       | ↔     |      |       | ↔     | ↔     |       | ↔     | ↔     |
| Traffic Volume (vph)    | 74    | 875   | 22   | 77    | 678   | 62   | 173   | 12    | 115   | 48    | 5     | 31    |
| Future Volume (vph)     | 74    | 875   | 22   | 77    | 678   | 62   | 173   | 12    | 115   | 48    | 5     | 31    |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  |
| Lane Width (ft)         | 12    | 11    | 12   | 12    | 11    | 12   | 12    | 13    | 13    | 12    | 13    | 13    |
| Storage Length (ft)     | 0     |       | 0    | 0     |       | 0    | 0     |       | 25    | 0     |       | 25    |
| Storage Lanes           | 0     |       | 0    | 0     |       | 0    | 0     |       | 1     | 0     |       | 1     |
| Taper Length (ft)       | 25    |       |      | 25    |       |      | 25    |       |       | 25    |       |       |
| Lane Util. Factor       | 0.95  | 0.95  | 0.95 | 0.95  | 0.95  | 0.95 | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Frt                     |       | 0.997 |      |       | 0.989 |      |       |       | 0.850 |       |       | 0.850 |
| Flt Protected           |       | 0.996 |      |       | 0.995 |      |       | 0.955 |       |       | 0.957 |       |
| Satd. Flow (prot)       | 0     | 3397  | 0    | 0     | 3367  | 0    | 0     | 1838  | 1636  | 0     | 1842  | 1636  |
| Flt Permitted           |       | 0.726 |      |       | 0.729 |      |       | 0.695 |       |       | 0.688 |       |
| Satd. Flow (perm)       | 0     | 2476  | 0    | 0     | 2467  | 0    | 0     | 1338  | 1636  | 0     | 1324  | 1636  |
| Right Turn on Red       |       |       | Yes  |       |       | Yes  |       |       | Yes   |       |       | Yes   |
| Satd. Flow (RTOR)       |       | 4     |      |       | 12    |      |       |       | 157   |       |       | 157   |
| Link Speed (mph)        |       | 30    |      |       | 30    |      |       | 25    |       |       | 25    |       |
| Link Distance (ft)      |       | 442   |      |       | 502   |      |       | 142   |       |       | 135   |       |
| Travel Time (s)         |       | 10.0  |      |       | 11.4  |      |       | 3.9   |       |       | 3.7   |       |
| Peak Hour Factor        | 0.93  | 0.93  | 0.93 | 0.90  | 0.90  | 0.90 | 0.84  | 0.84  | 0.84  | 0.85  | 0.85  | 0.85  |
| Adj. Flow (vph)         | 80    | 941   | 24   | 86    | 753   | 69   | 206   | 14    | 137   | 56    | 6     | 36    |
| Shared Lane Traffic (%) |       |       |      |       |       |      |       |       |       |       |       |       |
| Lane Group Flow (vph)   | 0     | 1045  | 0    | 0     | 908   | 0    | 0     | 220   | 137   | 0     | 62    | 36    |
| Turn Type               | pm+pt | NA    |      | Perm  | NA    |      | Perm  | NA    | Perm  | Perm  | NA    | Perm  |
| Protected Phases        | 1     | 6     |      |       | 2     |      |       | 4     |       |       | 4     |       |
| Permitted Phases        | 6     |       |      | 2     |       |      | 4     |       | 4     | 4     |       | 4     |
| Detector Phase          | 1     | 6     |      | 2     | 2     |      | 4     | 4     | 4     | 4     | 4     | 4     |
| Switch Phase            |       |       |      |       |       |      |       |       |       |       |       |       |
| Minimum Initial (s)     | 5.0   | 15.0  |      | 15.0  | 15.0  |      | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   |
| Minimum Split (s)       | 9.0   | 20.8  |      | 20.8  | 20.8  |      | 11.0  | 11.0  | 11.0  | 11.0  | 11.0  | 11.0  |
| Total Split (s)         | 9.0   | 40.0  |      | 31.0  | 31.0  |      | 13.0  | 13.0  | 13.0  | 13.0  | 13.0  | 13.0  |
| Total Split (%)         | 12.0% | 53.3% |      | 41.3% | 41.3% |      | 17.3% | 17.3% | 17.3% | 17.3% | 17.3% | 17.3% |
| Yellow Time (s)         | 3.0   | 4.3   |      | 4.3   | 4.3   |      | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |
| All-Red Time (s)        | 1.0   | 1.5   |      | 1.5   | 1.5   |      | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s)    |       | 0.0   |      |       | 0.0   |      |       | 0.0   | 0.0   |       | 0.0   | 0.0   |
| Total Lost Time (s)     |       | 5.8   |      |       | 5.8   |      |       | 4.0   | 4.0   |       | 4.0   | 4.0   |
| Lead/Lag                | Lead  |       |      | Lag   | Lag   |      | Lag   | Lag   | Lag   | Lag   | Lag   | Lag   |
| Lead-Lag Optimize?      | Yes   |       |      | Yes   | Yes   |      | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Recall Mode             | Min   | C-Max |      | C-Max | C-Max |      | None  | None  | None  | None  | None  | None  |
| Act Effct Green (s)     |       | 41.6  |      |       | 32.1  |      |       | 23.6  | 23.6  |       | 23.6  | 23.6  |
| Actuated g/C Ratio      |       | 0.55  |      |       | 0.43  |      |       | 0.31  | 0.31  |       | 0.31  | 0.31  |
| v/c Ratio               |       | 0.74  |      |       | 0.86  |      |       | 0.52  | 0.22  |       | 0.15  | 0.06  |
| Control Delay           |       | 15.4  |      |       | 21.6  |      |       | 27.5  | 3.9   |       | 21.1  | 0.2   |
| Queue Delay             |       | 0.0   |      |       | 0.0   |      |       | 0.0   | 0.0   |       | 0.0   | 0.0   |
| Total Delay             |       | 15.4  |      |       | 21.6  |      |       | 27.5  | 3.9   |       | 21.1  | 0.2   |
| LOS                     |       | B     |      |       | C     |      |       | C     | A     |       | C     | A     |
| Approach Delay          |       | 15.4  |      |       | 21.6  |      |       | 18.5  |       |       | 13.4  |       |
| Approach LOS            |       | B     |      |       | C     |      |       | B     |       |       | B     |       |
| Queue Length 50th (ft)  |       | 140   |      |       | 93    |      |       | 86    | 0     |       | 21    | 0     |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza 2040 Overlay & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

| Lane Group              | Ø3   |
|-------------------------|------|
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 3    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 22.0 |
| Total Split (s)         | 22.0 |
| Total Split (%)         | 29%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                | Lead |
| Lead-Lag Optimize?      | Yes  |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 190                                                                               |                                                                                   |                                                                                   | #159                                                                              |                                                                                   |                                                                                    | 142                                                                                 | 24                                                                                  |                                                                                     | 47                                                                                  | 0                                                                                   |
| Internal Link Dist (ft) |                                                                                   | 362                                                                               |                                                                                   |                                                                                   | 422                                                                               |                                                                                   |                                                                                    | 62                                                                                  |                                                                                     |                                                                                     | 55                                                                                  |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |
| Base Capacity (vph)     |                                                                                   | 1419                                                                              |                                                                                   |                                                                                   | 1061                                                                              |                                                                                   |                                                                                    | 421                                                                                 | 623                                                                                 |                                                                                     | 417                                                                                 | 623                                                                                 |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       |                                                                                   | 0.74                                                                              |                                                                                   |                                                                                   | 0.86                                                                              |                                                                                   |                                                                                    | 0.52                                                                                | 0.22                                                                                |                                                                                     | 0.15                                                                                | 0.06                                                                                |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 14 (19%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 18.1

Intersection LOS: B

Intersection Capacity Utilization 79.9%

ICU Level of Service D

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)

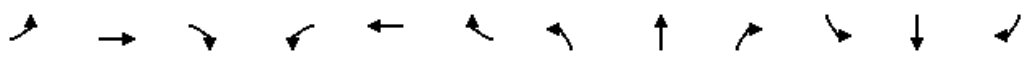
|                                                                                            |                                                                                            |                                                                                        |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø3 |  Ø4 |
| 9 s                                                                                        | 31 s                                                                                       | 22 s                                                                                   | 13 s                                                                                     |
|  Ø6 (R) |                                                                                            |                                                                                        |                                                                                          |
| 40 s                                                                                       |                                                                                            |                                                                                        |                                                                                          |



|                         |    |
|-------------------------|----|
| Lane Group              | Ø3 |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |

# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) and Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |       |      |       |       |      |       |       |       |       |       |      |
|-------------------------|------------------------------------------------------------------------------------|-------|------|-------|-------|------|-------|-------|-------|-------|-------|------|
| Lane Group              | EBL                                                                                | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR   | SBL   | SBT   | SBR  |
| Lane Configurations     |                                                                                    | ↔     |      |       | ↔     |      |       | ↔     | ↔     | ↔     | ↔     |      |
| Traffic Volume (vph)    | 11                                                                                 | 989   | 107  | 48    | 765   | 2    | 106   | 3     | 67    | 1     | 3     | 10   |
| Future Volume (vph)     | 11                                                                                 | 989   | 107  | 48    | 765   | 2    | 106   | 3     | 67    | 1     | 3     | 10   |
| Ideal Flow (vphpl)      | 1900                                                                               | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12                                                                                 | 11    | 12   | 12    | 11    | 12   | 12    | 10    | 10    | 12    | 12    | 12   |
| Storage Length (ft)     | 0                                                                                  |       | 0    | 0     |       | 0    | 0     |       | 250   | 0     |       | 0    |
| Storage Lanes           | 0                                                                                  |       | 0    | 0     |       | 0    | 0     |       | 1     | 1     |       | 0    |
| Taper Length (ft)       | 25                                                                                 |       |      | 25    |       |      | 25    |       |       | 25    |       |      |
| Lane Util. Factor       | 0.95                                                                               | 0.95  | 0.95 | 0.95  | 0.95  | 0.95 | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00 |
| Frt                     |                                                                                    | 0.986 |      |       |       |      |       |       | 0.850 |       | 0.885 |      |
| Flt Protected           |                                                                                    | 0.999 |      |       | 0.997 |      |       | 0.954 |       | 0.950 |       |      |
| Satd. Flow (prot)       | 0                                                                                  | 3370  | 0    | 0     | 3411  | 0    | 0     | 1659  | 1478  | 1770  | 1649  | 0    |
| Flt Permitted           |                                                                                    | 0.949 |      |       | 0.805 |      |       | 0.720 |       | 0.655 |       |      |
| Satd. Flow (perm)       | 0                                                                                  | 3201  | 0    | 0     | 2754  | 0    | 0     | 1252  | 1478  | 1220  | 1649  | 0    |
| Right Turn on Red       |                                                                                    |       | Yes  |       |       | Yes  |       |       | Yes   |       |       | Yes  |
| Satd. Flow (RTOR)       |                                                                                    | 29    |      |       |       |      |       |       | 111   |       | 13    |      |
| Link Speed (mph)        |                                                                                    | 30    |      |       | 30    |      |       | 25    |       |       | 25    |      |
| Link Distance (ft)      |                                                                                    | 502   |      |       | 407   |      |       | 423   |       |       | 198   |      |
| Travel Time (s)         |                                                                                    | 11.4  |      |       | 9.3   |      |       | 11.5  |       |       | 5.4   |      |
| Peak Hour Factor        | 0.93                                                                               | 0.93  | 0.93 | 0.96  | 0.96  | 0.96 | 0.82  | 0.82  | 0.82  | 0.80  | 0.80  | 0.80 |
| Adj. Flow (vph)         | 12                                                                                 | 1063  | 115  | 50    | 797   | 2    | 129   | 4     | 82    | 1     | 4     | 13   |
| Shared Lane Traffic (%) |                                                                                    |       |      |       |       |      |       |       |       |       |       |      |
| Lane Group Flow (vph)   | 0                                                                                  | 1190  | 0    | 0     | 849   | 0    | 0     | 133   | 82    | 1     | 17    | 0    |
| Turn Type               | pm+pt                                                                              | NA    |      | Perm  | NA    |      | Perm  | NA    | Perm  | Perm  | NA    |      |
| Protected Phases        | 1                                                                                  | 6     |      |       | 2     |      |       | 4     |       |       | 4     |      |
| Permitted Phases        | 6                                                                                  |       |      | 2     |       |      | 4     |       | 4     | 4     |       |      |
| Detector Phase          | 1                                                                                  | 6     |      | 2     | 2     |      | 4     | 4     | 4     | 4     | 4     |      |
| Switch Phase            |                                                                                    |       |      |       |       |      |       |       |       |       |       |      |
| Minimum Initial (s)     | 3.0                                                                                | 15.0  |      | 15.0  | 15.0  |      | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   |      |
| Minimum Split (s)       | 7.3                                                                                | 21.3  |      | 21.3  | 21.3  |      | 11.9  | 11.9  | 11.9  | 11.9  | 11.9  |      |
| Total Split (s)         | 7.3                                                                                | 53.0  |      | 45.7  | 45.7  |      | 22.0  | 22.0  | 22.0  | 22.0  | 22.0  |      |
| Total Split (%)         | 9.7%                                                                               | 70.7% |      | 60.9% | 60.9% |      | 29.3% | 29.3% | 29.3% | 29.3% | 29.3% |      |
| Yellow Time (s)         | 3.3                                                                                | 5.0   |      | 5.0   | 5.0   |      | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |      |
| All-Red Time (s)        | 1.0                                                                                | 1.3   |      | 1.3   | 1.3   |      | 1.9   | 1.9   | 1.9   | 1.9   | 1.9   |      |
| Lost Time Adjust (s)    |                                                                                    | 0.0   |      |       | 0.0   |      |       | 0.0   | 0.0   | 0.0   | 0.0   |      |
| Total Lost Time (s)     |                                                                                    | 6.3   |      |       | 6.3   |      |       | 4.9   | 4.9   | 4.9   | 4.9   |      |
| Lead/Lag                | Lead                                                                               |       |      | Lag   | Lag   |      |       |       |       |       |       |      |
| Lead-Lag Optimize?      | Yes                                                                                |       |      | Yes   | Yes   |      |       |       |       |       |       |      |
| Recall Mode             | Max                                                                                | C-Max |      | C-Max | C-Max |      | None  | None  | None  | None  | None  |      |
| Act Effect Green (s)    |                                                                                    | 54.4  |      |       | 39.4  |      |       | 11.8  | 11.8  | 11.8  | 11.8  |      |
| Actuated g/C Ratio      |                                                                                    | 0.73  |      |       | 0.53  |      |       | 0.16  | 0.16  | 0.16  | 0.16  |      |
| v/c Ratio               |                                                                                    | 0.51  |      |       | 0.59  |      |       | 0.68  | 0.25  | 0.01  | 0.06  |      |
| Control Delay           |                                                                                    | 2.3   |      |       | 5.7   |      |       | 46.5  | 5.0   | 24.0  | 14.9  |      |
| Queue Delay             |                                                                                    | 0.1   |      |       | 0.0   |      |       | 0.0   | 0.0   | 0.0   | 0.0   |      |
| Total Delay             |                                                                                    | 2.4   |      |       | 5.7   |      |       | 46.5  | 5.0   | 24.0  | 14.9  |      |
| LOS                     |                                                                                    | A     |      |       | A     |      |       | D     | A     | C     | B     |      |
| Approach Delay          |                                                                                    | 2.4   |      |       | 5.7   |      |       | 30.7  |       |       | 15.4  |      |
| Approach LOS            |                                                                                    | A     |      |       | A     |      |       | C     |       |       | B     |      |
| Queue Length 50th (ft)  |                                                                                    | 30    |      |       | 36    |      |       | 59    | 0     | 0     | 2     |      |

# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) and Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 53                                                                                |                                                                                   |                                                                                   | 33                                                                                |                                                                                   |                                                                                    | 94                                                                                  | 15                                                                                  | 4                                                                                   | 14                                                                                  |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 422                                                                               |                                                                                   |                                                                                   | 327                                                                               |                                                                                   |                                                                                    | 343                                                                                 |                                                                                     |                                                                                     | 118                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 250                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 2350                                                                              |                                                                                   |                                                                                   | 1446                                                                              |                                                                                   |                                                                                    | 285                                                                                 | 422                                                                                 | 278                                                                                 | 386                                                                                 |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 184                                                                               |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.55                                                                              |                                                                                   |                                                                                   | 0.59                                                                              |                                                                                   |                                                                                    | 0.47                                                                                | 0.19                                                                                | 0.00                                                                                | 0.04                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 24 (32%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 6.4

Intersection LOS: A

Intersection Capacity Utilization 79.3%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                           |                                                                                         |
|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|  Ø1      |  Ø2 (R) |  Ø4 |
| 7.3 s                                                                                      | 45.7 s                                                                                    | 22 s                                                                                    |
|  Ø6 (R) |                                                                                           |                                                                                         |
| 53 s                                                                                       |                                                                                           |                                                                                         |

# 108: Burroughs Road & Route 58 (Black Rock Turnpike) 2040 Background Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 86                                                                                | 973                                                                               | 15                                                                                | 7                                                                                 | 746                                                                               | 156                                                                               | 18                                                                                | 110                                                                                 | 7                                                                                   | 129                                                                                 | 52                                                                                  | 52                                                                                  |
| Future Volume (vph)     | 86                                                                                | 973                                                                               | 15                                                                                | 7                                                                                 | 746                                                                               | 156                                                                               | 18                                                                                | 110                                                                                 | 7                                                                                   | 129                                                                                 | 52                                                                                  | 52                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 16                                                                                  | 12                                                                                  | 12                                                                                  | 16                                                                                  | 12                                                                                  |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   | 0.974                                                                             |                                                                                   |                                                                                   | 0.993                                                                               |                                                                                     |                                                                                     | 0.970                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.993                                                                               |                                                                                     |                                                                                     | 0.973                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3401                                                                              | 0                                                                                 | 0                                                                                 | 3332                                                                              | 0                                                                                 | 0                                                                                 | 2082                                                                                | 0                                                                                   | 0                                                                                   | 1992                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.773                                                                             |                                                                                   |                                                                                   | 0.946                                                                             |                                                                                   |                                                                                   | 0.939                                                                               |                                                                                     |                                                                                     | 0.733                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 2639                                                                              | 0                                                                                 | 0                                                                                 | 3152                                                                              | 0                                                                                 | 0                                                                                 | 1968                                                                                | 0                                                                                   | 0                                                                                   | 1501                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 3                                                                                 |                                                                                   |                                                                                   | 56                                                                                |                                                                                   |                                                                                   | 4                                                                                   |                                                                                     |                                                                                     | 19                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 407                                                                               |                                                                                   |                                                                                   | 996                                                                               |                                                                                   |                                                                                   | 466                                                                                 |                                                                                     |                                                                                     | 300                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                   | 22.6                                                                              |                                                                                   |                                                                                   | 12.7                                                                                |                                                                                     |                                                                                     | 8.2                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.99                                                                              | 0.99                                                                              | 0.99                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.90                                                                              | 0.90                                                                                | 0.90                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Adj. Flow (vph)         | 87                                                                                | 983                                                                               | 15                                                                                | 8                                                                                 | 811                                                                               | 170                                                                               | 20                                                                                | 122                                                                                 | 8                                                                                   | 139                                                                                 | 56                                                                                  | 56                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 1085                                                                              | 0                                                                                 | 0                                                                                 | 989                                                                               | 0                                                                                 | 0                                                                                 | 150                                                                                 | 0                                                                                   | 0                                                                                   | 251                                                                                 | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 6                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 4                                                                                   |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 15.0                                                                              | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 9.0                                                                               | 9.0                                                                                 |                                                                                     | 9.0                                                                                 | 9.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 20.6                                                                              | 20.6                                                                              |                                                                                   | 20.6                                                                              | 20.6                                                                              |                                                                                   | 14.4                                                                              | 14.4                                                                                |                                                                                     | 14.4                                                                                | 14.4                                                                                |                                                                                     |
| Total Split (s)         | 49.2                                                                              | 49.2                                                                              |                                                                                   | 49.2                                                                              | 49.2                                                                              |                                                                                   | 25.8                                                                              | 25.8                                                                                |                                                                                     | 25.8                                                                                | 25.8                                                                                |                                                                                     |
| Total Split (%)         | 65.6%                                                                             | 65.6%                                                                             |                                                                                   | 65.6%                                                                             | 65.6%                                                                             |                                                                                   | 34.4%                                                                             | 34.4%                                                                               |                                                                                     | 34.4%                                                                               | 34.4%                                                                               |                                                                                     |
| Yellow Time (s)         | 4.1                                                                               | 4.1                                                                               |                                                                                   | 4.1                                                                               | 4.1                                                                               |                                                                                   | 3.1                                                                               | 3.1                                                                                 |                                                                                     | 3.1                                                                                 | 3.1                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.5                                                                               | 1.5                                                                               |                                                                                   | 1.5                                                                               | 1.5                                                                               |                                                                                   | 2.3                                                                               | 2.3                                                                                 |                                                                                     | 2.3                                                                                 | 2.3                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   | 5.4                                                                                 |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | C-Max                                                                             | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                              | None                                                                                |                                                                                     | None                                                                                | None                                                                                |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 48.7                                                                              |                                                                                   |                                                                                   | 48.7                                                                              |                                                                                   |                                                                                   | 15.3                                                                                |                                                                                     |                                                                                     | 15.3                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.65                                                                              |                                                                                   |                                                                                   | 0.65                                                                              |                                                                                   |                                                                                   | 0.20                                                                                |                                                                                     |                                                                                     | 0.20                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.63                                                                              |                                                                                   |                                                                                   | 0.48                                                                              |                                                                                   |                                                                                   | 0.37                                                                                |                                                                                     |                                                                                     | 0.78                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   | 6.2                                                                               |                                                                                   |                                                                                   | 26.3                                                                                |                                                                                     |                                                                                     | 42.4                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   | 6.2                                                                               |                                                                                   |                                                                                   | 26.3                                                                                |                                                                                     |                                                                                     | 42.4                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   | 6.2                                                                               |                                                                                   |                                                                                   | 26.3                                                                                |                                                                                     |                                                                                     | 42.4                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 48                                                                                |                                                                                   |                                                                                   | 53                                                                                |                                                                                   |                                                                                   | 58                                                                                  |                                                                                     |                                                                                     | 102                                                                                 |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 72                                                                                |                                                                                   |                                                                                   | 155                                                                               |                                                                                   |                                                                                   | 100                                                                                 |                                                                                     |                                                                                     | 167                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 327                                                                               |                                                                                   |                                                                                   | 916                                                                               |                                                                                   |                                                                                   | 386                                                                                 |                                                                                     |                                                                                     | 220                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# 108: Burroughs Road & Route 58 (Black Rock Turnpike) 2040 Background Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Base Capacity (vph)    | 1713                                                                              |                                                                                   |                                                                                   | 2064                                                                              |                                                                                   |                                                                                   | 538                                                                                |                                                                                     |                                                                                     | 422                                                                                 |                                                                                     |                                                                                     |
| Starvation Cap Reductn | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                  |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |
| Spillback Cap Reductn  | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                  |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |
| Storage Cap Reductn    | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                  |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |
| Reduced v/c Ratio      | 0.63                                                                              |                                                                                   |                                                                                   | 0.48                                                                              |                                                                                   |                                                                                   | 0.28                                                                               |                                                                                     |                                                                                     | 0.59                                                                                |                                                                                     |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 22 (29%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 10.8

Intersection LOS: B

Intersection Capacity Utilization 89.2%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)

|                                                                                          |                                                                                     |
|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  Ø2 (R) |  |
| 49.2 s                                                                                   | 25.8 s                                                                              |
|  Ø6 (R) |  |
| 49.2 s                                                                                   | 25.8 s                                                                              |

# 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 581 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         | →     | ↖     | ↗    | ↘     | ↙     | ↘     | ↙    | ↗     | ↘     | ↙    | ↗    | ↘     |
|-------------------------|-------|-------|------|-------|-------|-------|------|-------|-------|------|------|-------|
| Lane Group              | EBT   | EBR   | EBR2 | WBL2  | WBL   | WBT   | WBR  | NWL2  | NWL   | NWR  | NWR2 | NEL   |
| Lane Configurations     | ↖     | ↗     |      |       |       | ↖     |      |       | ↗     |      |      |       |
| Traffic Volume (vph)    | 545   | 555   | 3    | 22    | 8     | 383   | 2    | 2     | 479   | 5    | 40   | 7     |
| Future Volume (vph)     | 545   | 555   | 3    | 22    | 8     | 383   | 2    | 2     | 479   | 5    | 40   | 7     |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900 | 1900  |
| Lane Width (ft)         | 12    | 12    | 12   | 12    | 11    | 11    | 12   | 12    | 10    | 12   | 12   | 12    |
| Lane Util. Factor       | 1.00  | 1.00  | 1.00 | 0.95  | 0.95  | 0.95  | 0.95 | 0.95  | 0.97  | 0.95 | 0.95 | 1.00  |
| Frt                     |       | 0.850 |      |       |       | 0.999 |      |       | 0.987 |      |      |       |
| Flt Protected           |       |       |      |       |       | 0.996 |      |       | 0.956 |      |      |       |
| Satd. Flow (prot)       | 1863  | 1583  | 0    | 0     | 0     | 3404  | 0    | 0     | 3182  | 0    | 0    | 0     |
| Flt Permitted           |       |       |      |       |       | 0.882 |      |       | 0.952 |      |      |       |
| Satd. Flow (perm)       | 1863  | 1583  | 0    | 0     | 0     | 3015  | 0    | 0     | 3169  | 0    | 0    | 0     |
| Right Turn on Red       |       |       | Yes  |       |       |       | Yes  |       |       |      | Yes  |       |
| Satd. Flow (RTOR)       |       | 67    |      |       |       | 1     |      |       | 180   |      |      |       |
| Link Speed (mph)        | 30    |       |      |       |       | 30    |      |       | 30    |      |      |       |
| Link Distance (ft)      | 996   |       |      |       |       | 549   |      |       | 218   |      |      |       |
| Travel Time (s)         | 22.6  |       |      |       |       | 12.5  |      |       | 5.0   |      |      |       |
| Peak Hour Factor        | 0.97  | 0.97  | 0.97 | 0.86  | 0.86  | 0.86  | 0.86 | 0.91  | 0.91  | 0.91 | 0.91 | 0.80  |
| Adj. Flow (vph)         | 562   | 572   | 3    | 26    | 9     | 445   | 2    | 2     | 526   | 5    | 44   | 9     |
| Shared Lane Traffic (%) |       |       |      |       |       |       |      |       |       |      |      |       |
| Lane Group Flow (vph)   | 562   | 575   | 0    | 0     | 0     | 482   | 0    | 0     | 577   | 0    | 0    | 0     |
| Turn Type               | NA    | pm+ov |      | Perm  | Perm  | NA    |      | D.Pm  | Prot  |      |      | Perm  |
| Protected Phases        | 2     | 4     |      |       |       | 2     |      |       | 4     |      |      |       |
| Permitted Phases        |       | 2     |      | 2     | 2     |       |      | 4     |       |      |      | 5     |
| Detector Phase          | 2     | 4     |      | 2     | 2     | 2     |      | 4     | 4     |      |      | 5     |
| Switch Phase            |       |       |      |       |       |       |      |       |       |      |      |       |
| Minimum Initial (s)     | 15.0  | 9.0   |      | 15.0  | 15.0  | 15.0  |      | 9.0   | 9.0   |      |      | 5.0   |
| Minimum Split (s)       | 22.8  | 15.4  |      | 22.8  | 22.8  | 22.8  |      | 15.4  | 15.4  |      |      | 12.6  |
| Total Split (s)         | 39.4  | 23.0  |      | 39.4  | 39.4  | 39.4  |      | 23.0  | 23.0  |      |      | 12.6  |
| Total Split (%)         | 52.5% | 30.7% |      | 52.5% | 52.5% | 52.5% |      | 30.7% | 30.7% |      |      | 16.8% |
| Yellow Time (s)         | 4.1   | 3.3   |      | 4.1   | 4.1   | 4.1   |      | 3.3   | 3.3   |      |      | 3.3   |
| All-Red Time (s)        | 3.7   | 3.1   |      | 3.7   | 3.7   | 3.7   |      | 3.1   | 3.1   |      |      | 4.3   |
| Lost Time Adjust (s)    | 0.0   | 0.0   |      |       |       | 0.0   |      |       | 0.0   |      |      |       |
| Total Lost Time (s)     | 7.8   | 6.4   |      |       |       | 7.8   |      |       | 6.4   |      |      |       |
| Lead/Lag                |       |       |      |       |       |       |      |       |       |      |      |       |
| Lead-Lag Optimize?      |       |       |      |       |       |       |      |       |       |      |      |       |
| Recall Mode             | C-Min | None  |      | C-Min | C-Min | C-Min |      | None  | None  |      |      | None  |
| Act Effct Green (s)     | 42.4  | 67.3  |      |       |       | 42.4  |      |       | 13.3  |      |      |       |
| Actuated g/C Ratio      | 0.57  | 0.90  |      |       |       | 0.57  |      |       | 0.18  |      |      |       |
| v/c Ratio               | 0.53  | 0.40  |      |       |       | 0.28  |      |       | 0.81  |      |      |       |
| Control Delay           | 10.6  | 2.8   |      |       |       | 11.0  |      |       | 29.8  |      |      |       |
| Queue Delay             | 0.0   | 0.0   |      |       |       | 0.0   |      |       | 0.0   |      |      |       |
| Total Delay             | 10.6  | 2.8   |      |       |       | 11.0  |      |       | 29.8  |      |      |       |
| LOS                     | B     | A     |      |       |       | B     |      |       | C     |      |      |       |
| Approach Delay          | 6.7   |       |      |       |       | 11.0  |      |       | 29.8  |      |      |       |
| Approach LOS            | A     |       |      |       |       | B     |      |       | C     |      |      |       |
| Queue Length 50th (ft)  | 95    | 0     |      |       |       | 45    |      |       | 92    |      |      |       |
| Queue Length 95th (ft)  | 279   | 76    |      |       |       | 108   |      |       | 139   |      |      |       |
| Internal Link Dist (ft) | 916   |       |      |       |       | 469   |      |       | 138   |      |      |       |
| Turn Bay Length (ft)    |       |       |      |       |       |       |      |       |       |      |      |       |



# 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | NET                                                                               | NER                                                                               | NER2                                                                              | SWL                                                                               | SWT                                                                               | SWR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |                                                                                   |  |                                                                                   |
| Traffic Volume (vph)    | 0                                                                                 | 1                                                                                 | 3                                                                                 | 2                                                                                 | 0                                                                                 | 3                                                                                 |
| Future Volume (vph)     | 0                                                                                 | 1                                                                                 | 3                                                                                 | 2                                                                                 | 0                                                                                 | 3                                                                                 |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 12                                                                                | 12                                                                                | 12                                                                                | 15                                                                                | 12                                                                                | 12                                                                                |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.952                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.923                                                                             |                                                                                   |
| Flt Protected           | 0.969                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.979                                                                             |                                                                                   |
| Satd. Flow (prot)       | 1718                                                                              | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1683                                                                              | 0                                                                                 |
| Flt Permitted           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1773                                                                              | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1719                                                                              | 0                                                                                 |
| Right Turn on Red       |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |
| Satd. Flow (RTOR)       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |
| Link Distance (ft)      | 653                                                                               |                                                                                   |                                                                                   |                                                                                   | 695                                                                               |                                                                                   |
| Travel Time (s)         | 17.8                                                                              |                                                                                   |                                                                                   |                                                                                   | 19.0                                                                              |                                                                                   |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              |
| Adj. Flow (vph)         | 0                                                                                 | 1                                                                                 | 4                                                                                 | 3                                                                                 | 0                                                                                 | 4                                                                                 |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 14                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 |
| Turn Type               | NA                                                                                |                                                                                   |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   |
| Protected Phases        | 5                                                                                 |                                                                                   |                                                                                   |                                                                                   | 5                                                                                 |                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   |
| Detector Phase          | 5                                                                                 |                                                                                   |                                                                                   | 5                                                                                 | 5                                                                                 |                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)     | 5.0                                                                               |                                                                                   |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   |
| Minimum Split (s)       | 12.6                                                                              |                                                                                   |                                                                                   | 12.6                                                                              | 12.6                                                                              |                                                                                   |
| Total Split (s)         | 12.6                                                                              |                                                                                   |                                                                                   | 12.6                                                                              | 12.6                                                                              |                                                                                   |
| Total Split (%)         | 16.8%                                                                             |                                                                                   |                                                                                   | 16.8%                                                                             | 16.8%                                                                             |                                                                                   |
| Yellow Time (s)         | 3.3                                                                               |                                                                                   |                                                                                   | 3.3                                                                               | 3.3                                                                               |                                                                                   |
| All-Red Time (s)        | 4.3                                                                               |                                                                                   |                                                                                   | 4.3                                                                               | 4.3                                                                               |                                                                                   |
| Lost Time Adjust (s)    | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |
| Total Lost Time (s)     | 7.6                                                                               |                                                                                   |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Recall Mode             | None                                                                              |                                                                                   |                                                                                   | None                                                                              | None                                                                              |                                                                                   |
| Act Effct Green (s)     | 5.1                                                                               |                                                                                   |                                                                                   |                                                                                   | 5.1                                                                               |                                                                                   |
| Actuated g/C Ratio      | 0.07                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.07                                                                              |                                                                                   |
| v/c Ratio               | 0.12                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.06                                                                              |                                                                                   |
| Control Delay           | 35.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 34.0                                                                              |                                                                                   |
| Queue Delay             | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |
| Total Delay             | 35.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 34.0                                                                              |                                                                                   |
| LOS                     | D                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |
| Approach Delay          | 35.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 34.0                                                                              |                                                                                   |
| Approach LOS            | D                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |
| Queue Length 50th (ft)  | 6                                                                                 |                                                                                   |                                                                                   |                                                                                   | 3                                                                                 |                                                                                   |
| Queue Length 95th (ft)  | 21                                                                                |                                                                                   |                                                                                   |                                                                                   | 14                                                                                |                                                                                   |
| Internal Link Dist (ft) | 573                                                                               |                                                                                   |                                                                                   |                                                                                   | 615                                                                               |                                                                                   |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)

Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBT                                                                               | EBR                                                                               | EBR2                                                                              | WBL2                                                                              | WBL                                                                               | WBT                                                                               | WBR                                                                                | NWL2                                                                                | NWL                                                                                 | NWR                                                                                 | NWR2                                                                                | NEL                                                                                 |
| Base Capacity (vph)    | 1053                                                                              | 1412                                                                              |                                                                                   |                                                                                   |                                                                                   | 1705                                                                              |                                                                                    |                                                                                     | 841                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                    |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                    |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                    |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Reduced v/c Ratio      | 0.53                                                                              | 0.41                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.28                                                                              |                                                                                    |                                                                                     | 0.69                                                                                |                                                                                     |                                                                                     |                                                                                     |

Intersection Summary

|                                                               |                        |
|---------------------------------------------------------------|------------------------|
| Area Type:                                                    | Other                  |
| Cycle Length: 75                                              |                        |
| Actuated Cycle Length: 75                                     |                        |
| Offset: 44 (59%), Referenced to phase 2:EBWB, Start of Yellow |                        |
| Natural Cycle: 60                                             |                        |
| Control Type: Actuated-Coordinated                            |                        |
| Maximum v/c Ratio: 0.81                                       |                        |
| Intersection Signal Delay: 13.9                               | Intersection LOS: B    |
| Intersection Capacity Utilization 71.0%                       | ICU Level of Service C |
| Analysis Period (min) 15                                      |                        |

Splits and Phases: 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)/Route 58 (Tunxis Hill Cut

|                                                                                          |                                                                                      |                                                                                        |
|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
|  Ø2 (R) |  Ø4 |  Ø5 |
| 39.4 s                                                                                   | 23 s                                                                                 | 12.6 s                                                                                 |

|                        |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group             | NET                                                                               | NER                                                                               | NER2                                                                              | SWL                                                                               | SWT                                                                               | SWR                                                                               |
| Base Capacity (vph)    | 120                                                                               |                                                                                   |                                                                                   |                                                                                   | 116                                                                               |                                                                                   |
| Starvation Cap Reductn | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |
| Storage Cap Reductn    | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |
| Reduced v/c Ratio      | 0.12                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.06                                                                              |                                                                                   |
| Intersection Summary   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

# 201: Tunxis Hill Road & Route 58 (Tunxis Hill Cutoff) 2040 Background Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         | →     | ↘    | ↙    | ←     | ↖    | ↗     |
|-------------------------|-------|------|------|-------|------|-------|
| Lane Group              | EBT   | EBR  | WBL  | WBT   | NBL  | NBR   |
| Lane Configurations     | ↑↑    |      |      | ↑     | ↑    | ↑     |
| Traffic Volume (vph)    | 630   | 6    | 49   | 414   | 0    | 84    |
| Future Volume (vph)     | 630   | 6    | 49   | 414   | 0    | 84    |
| Ideal Flow (vphpl)      | 1900  | 1900 | 1900 | 1900  | 1900 | 1900  |
| Lane Width (ft)         | 11    | 12   | 12   | 11    | 10   | 10    |
| Storage Length (ft)     |       | 0    | 0    |       | 0    | 50    |
| Storage Lanes           |       | 0    | 0    |       | 1    | 1     |
| Taper Length (ft)       |       |      | 25   |       | 25   |       |
| Lane Util. Factor       | 0.95  | 0.95 | 1.00 | 1.00  | 1.00 | 1.00  |
| Frt                     | 0.999 |      |      |       |      | 0.850 |
| Flt Protected           |       |      |      | 0.995 |      |       |
| Satd. Flow (prot)       | 3418  | 0    | 0    | 1792  | 1739 | 1478  |
| Flt Permitted           |       |      |      | 0.995 |      |       |
| Satd. Flow (perm)       | 3418  | 0    | 0    | 1792  | 1739 | 1478  |
| Link Speed (mph)        | 30    |      |      | 30    | 25   |       |
| Link Distance (ft)      | 1095  |      |      | 214   | 782  |       |
| Travel Time (s)         | 24.9  |      |      | 4.9   | 21.3 |       |
| Peak Hour Factor        | 0.95  | 0.95 | 0.90 | 0.90  | 0.83 | 0.83  |
| Adj. Flow (vph)         | 663   | 6    | 54   | 460   | 0    | 101   |
| Shared Lane Traffic (%) |       |      |      |       |      |       |
| Lane Group Flow (vph)   | 669   | 0    | 0    | 514   | 0    | 101   |
| Sign Control            | Free  |      |      | Free  | Stop |       |

## Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 48.8% ICU Level of Service A

Analysis Period (min) 15

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.3  |      |      |      |      |      |
| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
| Lane Configurations      | ↑↑   |      |      | ↑    | ↑    | ↑    |
| Traffic Vol, veh/h       | 630  | 6    | 49   | 414  | 0    | 84   |
| Future Vol, veh/h        | 630  | 6    | 49   | 414  | 0    | 84   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | 0    | 50   |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 95   | 95   | 90   | 90   | 83   | 83   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 663  | 6    | 54   | 460  | 0    | 101  |

| Major/Minor          | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0      | 0      | 669    |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Critical Hdwy        | -      | -      | 4.13   |
| Critical Hdwy Stg 1  | -      | -      | -      |
| Critical Hdwy Stg 2  | -      | -      | -      |
| Follow-up Hdwy       | -      | -      | 2.219  |
| Pot Cap-1 Maneuver   | -      | -      | 919    |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | -      | -      | 919    |
| Mov Cap-2 Maneuver   | -      | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |

| Approach             | EB | WB | NB   |
|----------------------|----|----|------|
| HCM Control Delay, s | 0  | 1  | 11.4 |
| HCM LOS              |    |    | B    |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | -     | 662   | -   | -   | 919   | -   |
| HCM Lane V/C Ratio    | -     | 0.153 | -   | -   | 0.059 | -   |
| HCM Control Delay (s) | 0     | 11.4  | -   | -   | 9.2   | 0   |
| HCM Lane LOS          | A     | B     | -   | -   | A     | A   |
| HCM 95th %tile Q(veh) | -     | 0.5   | -   | -   | 0.2   | -   |

# 202: Route 732 (Black Rock Turnpike) & Judd Street 2040 Background Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (vph)    | 34                                                                                | 96                                                                                | 53                                                                                | 492                                                                               | 562                                                                               | 20                                                                                |
| Future Volume (vph)     | 34                                                                                | 96                                                                                | 53                                                                                | 492                                                                               | 562                                                                               | 20                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Storage Length (ft)     | 0                                                                                 | 0                                                                                 | 25                                                                                |                                                                                   |                                                                                   | 0                                                                                 |
| Storage Lanes           | 1                                                                                 | 0                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 25                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.900                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |
| Flt Protected           | 0.987                                                                             |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1875                                                                              | 0                                                                                 | 0                                                                                 | 3522                                                                              | 1853                                                                              | 0                                                                                 |
| Flt Permitted           | 0.987                                                                             |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1875                                                                              | 0                                                                                 | 0                                                                                 | 3522                                                                              | 1853                                                                              | 0                                                                                 |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 586                                                                               |                                                                                   |                                                                                   | 395                                                                               | 218                                                                               |                                                                                   |
| Travel Time (s)         | 16.0                                                                              |                                                                                   |                                                                                   | 9.0                                                                               | 5.0                                                                               |                                                                                   |
| Peak Hour Factor        | 0.83                                                                              | 0.83                                                                              | 0.91                                                                              | 0.91                                                                              | 0.95                                                                              | 0.95                                                                              |
| Adj. Flow (vph)         | 41                                                                                | 116                                                                               | 58                                                                                | 541                                                                               | 592                                                                               | 21                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 157                                                                               | 0                                                                                 | 0                                                                                 | 599                                                                               | 613                                                                               | 0                                                                                 |
| Sign Control            | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |

## Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 63.7% ICU Level of Service B

Analysis Period (min) 15



Intersection

Int Delay, s/veh 2.8

| Movement                 | EBL                                                                               | EBR  | NBL  | NBT                                                                               | SBT                                                                               | SBR  |
|--------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |  |      |      |  |  |      |
| Traffic Vol, veh/h       | 34                                                                                | 96   | 53   | 492                                                                               | 562                                                                               | 20   |
| Future Vol, veh/h        | 34                                                                                | 96   | 53   | 492                                                                               | 562                                                                               | 20   |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0    | 0                                                                                 | 0                                                                                 | 0    |
| Sign Control             | Stop                                                                              | Stop | Free | Free                                                                              | Free                                                                              | Free |
| RT Channelized           | -                                                                                 | None | -    | None                                                                              | -                                                                                 | None |
| Storage Length           | 0                                                                                 | -    | 25   | -                                                                                 | -                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 83                                                                                | 83   | 91   | 91                                                                                | 95                                                                                | 95   |
| Heavy Vehicles, %        | 2                                                                                 | 2    | 2    | 2                                                                                 | 2                                                                                 | 2    |
| Mvmt Flow                | 41                                                                                | 116  | 58   | 541                                                                               | 592                                                                               | 21   |

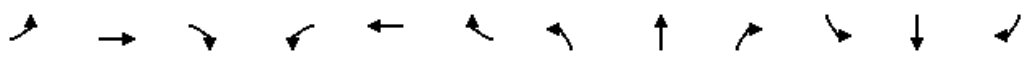
| Major/Minor          | Minor2 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 989    | 602    | 613    |
| Stage 1              | 602    | -      | -      |
| Stage 2              | 387    | -      | -      |
| Critical Hdwy        | 6.63   | 6.23   | 4.13   |
| Critical Hdwy Stg 1  | 5.43   | -      | -      |
| Critical Hdwy Stg 2  | 5.83   | -      | -      |
| Follow-up Hdwy       | 3.519  | 3.319  | 2.219  |
| Pot Cap-1 Maneuver   | 258    | 499    | 964    |
| Stage 1              | 546    | -      | -      |
| Stage 2              | 657    | -      | -      |
| Platoon blocked, %   |        |        |        |
| Mov Cap-1 Maneuver   | 236    | 499    | 964    |
| Mov Cap-2 Maneuver   | 236    | -      | -      |
| Stage 1              | 546    | -      | -      |
| Stage 2              | 600    | -      | -      |

| Approach             | EB   | NB  | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 20.6 | 1.1 | 0  |
| HCM LOS              | C    |     |    |

| Minor Lane/Major Mvmt | NBL  | NBT | EBLn1 | SBT | SBR |
|-----------------------|------|-----|-------|-----|-----|
| Capacity (veh/h)      | 964  | -   | 386   | -   | -   |
| HCM Lane V/C Ratio    | 0.06 | -   | 0.406 | -   | -   |
| HCM Control Delay (s) | 9    | 0.3 | 20.6  | -   | -   |
| HCM Lane LOS          | A    | A   | C     | -   | -   |
| HCM 95th %tile Q(veh) | 0.2  | -   | 1.9   | -   | -   |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike Interchange Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Saturday Midday

|                         |  |       |      |       |       |      |       |       |      |       |       |      |
|-------------------------|------------------------------------------------------------------------------------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|
| Lane Group              | EBL                                                                                | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
| Lane Configurations     |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Traffic Volume (vph)    | 6                                                                                  | 1     | 2    | 75    | 1     | 111  | 2     | 820   | 77   | 71    | 895   | 8    |
| Future Volume (vph)     | 6                                                                                  | 1     | 2    | 75    | 1     | 111  | 2     | 820   | 77   | 71    | 895   | 8    |
| Ideal Flow (vphpl)      | 1900                                                                               | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12                                                                                 | 16    | 12   | 12    | 16    | 12   | 12    | 13    | 12   | 12    | 13    | 12   |
| Lane Util. Factor       | 1.00                                                                               | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 |
| Frt                     |                                                                                    | 0.966 |      |       | 0.920 |      |       | 0.988 |      |       | 0.999 |      |
| Flt Protected           |                                                                                    | 0.968 |      |       | 0.980 |      |       |       |      |       | 0.996 |      |
| Satd. Flow (prot)       | 0                                                                                  | 1974  | 0    | 0     | 1903  | 0    | 0     | 1902  | 0    | 0     | 1915  | 0    |
| Flt Permitted           |                                                                                    | 0.719 |      |       | 0.864 |      |       | 0.999 |      |       | 0.872 |      |
| Satd. Flow (perm)       | 0                                                                                  | 1466  | 0    | 0     | 1678  | 0    | 0     | 1900  | 0    | 0     | 1677  | 0    |
| Right Turn on Red       |                                                                                    |       | Yes  |       |       | Yes  |       |       | Yes  |       |       | Yes  |
| Satd. Flow (RTOR)       |                                                                                    | 3     |      |       | 69    |      |       | 14    |      |       | 1     |      |
| Link Speed (mph)        |                                                                                    | 25    |      |       | 30    |      |       | 35    |      |       | 35    |      |
| Link Distance (ft)      |                                                                                    | 378   |      |       | 442   |      |       | 1898  |      |       | 522   |      |
| Travel Time (s)         |                                                                                    | 10.3  |      |       | 10.0  |      |       | 37.0  |      |       | 10.2  |      |
| Peak Hour Factor        | 0.80                                                                               | 0.80  | 0.80 | 0.80  | 0.80  | 0.80 | 0.94  | 0.94  | 0.94 | 0.94  | 0.94  | 0.94 |
| Adj. Flow (vph)         | 8                                                                                  | 1     | 3    | 94    | 1     | 139  | 2     | 872   | 82   | 76    | 952   | 9    |
| Shared Lane Traffic (%) |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 0                                                                                  | 12    | 0    | 0     | 234   | 0    | 0     | 956   | 0    | 0     | 1037  | 0    |
| Turn Type               | Perm                                                                               | NA    |      | Perm  | NA    |      | Perm  | NA    |      | Perm  | NA    |      |
| Protected Phases        |                                                                                    | 4     |      |       | 8     |      |       | 2     |      |       | 6     |      |
| Permitted Phases        | 4                                                                                  |       |      | 8     |       |      | 2     |       |      | 6     |       |      |
| Detector Phase          | 4                                                                                  | 4     |      | 8     | 8     |      | 2     | 2     |      | 6     | 6     |      |
| Switch Phase            |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Minimum Initial (s)     | 7.0                                                                                | 7.0   |      | 7.0   | 7.0   |      | 15.0  | 15.0  |      | 15.0  | 15.0  |      |
| Minimum Split (s)       | 11.7                                                                               | 11.7  |      | 11.7  | 11.7  |      | 20.6  | 20.6  |      | 20.6  | 20.6  |      |
| Total Split (s)         | 18.0                                                                               | 18.0  |      | 18.0  | 18.0  |      | 72.0  | 72.0  |      | 72.0  | 72.0  |      |
| Total Split (%)         | 20.0%                                                                              | 20.0% |      | 20.0% | 20.0% |      | 80.0% | 80.0% |      | 80.0% | 80.0% |      |
| Yellow Time (s)         | 3.3                                                                                | 3.3   |      | 3.3   | 3.3   |      | 4.0   | 4.0   |      | 4.0   | 4.0   |      |
| All-Red Time (s)        | 1.4                                                                                | 1.4   |      | 1.4   | 1.4   |      | 1.6   | 1.6   |      | 1.6   | 1.6   |      |
| Lost Time Adjust (s)    |                                                                                    | 0.0   |      |       | 0.0   |      |       | 0.0   |      |       | 0.0   |      |
| Total Lost Time (s)     |                                                                                    | 4.7   |      |       | 4.7   |      |       | 5.6   |      |       | 5.6   |      |
| Lead/Lag                |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Lead-Lag Optimize?      |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Recall Mode             | None                                                                               | None  |      | None  | None  |      | C-Min | C-Min |      | C-Min | C-Min |      |
| Act Effct Green (s)     |                                                                                    | 12.0  |      |       | 12.0  |      |       | 67.7  |      |       | 67.7  |      |
| Actuated g/C Ratio      |                                                                                    | 0.13  |      |       | 0.13  |      |       | 0.75  |      |       | 0.75  |      |
| v/c Ratio               |                                                                                    | 0.06  |      |       | 0.82  |      |       | 0.67  |      |       | 0.82  |      |
| Control Delay           |                                                                                    | 29.8  |      |       | 50.4  |      |       | 6.3   |      |       | 15.1  |      |
| Queue Delay             |                                                                                    | 0.0   |      |       | 0.0   |      |       | 0.0   |      |       | 0.0   |      |
| Total Delay             |                                                                                    | 29.8  |      |       | 50.4  |      |       | 6.3   |      |       | 15.1  |      |
| LOS                     |                                                                                    | C     |      |       | D     |      |       | A     |      |       | B     |      |
| Approach Delay          |                                                                                    | 29.8  |      |       | 50.4  |      |       | 6.3   |      |       | 15.1  |      |
| Approach LOS            |                                                                                    | C     |      |       | D     |      |       | A     |      |       | B     |      |
| Queue Length 50th (ft)  |                                                                                    | 4     |      |       | 89    |      |       | 122   |      |       | 352   |      |
| Queue Length 95th (ft)  |                                                                                    | 18    |      |       | #150  |      |       | 107   |      |       | 573   |      |
| Internal Link Dist (ft) |                                                                                    | 298   |      |       | 362   |      |       | 1818  |      |       | 442   |      |
| Turn Bay Length (ft)    |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

Timing Plan: Saturday MIDDAY

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Base Capacity (vph)    |                                                                                   | 223                                                                               |                                                                                   |                                                                                   | 310                                                                               |                                                                                   |                                                                                    | 1436                                                                                |                                                                                     |                                                                                     | 1265                                                                                |                                                                                     |
| Starvation Cap Reductn |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   | 0.05                                                                              |                                                                                   |                                                                                   | 0.75                                                                              |                                                                                   |                                                                                    | 0.67                                                                                |                                                                                     |                                                                                     | 0.82                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 45 (50%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 15.2

Intersection LOS: B

Intersection Capacity Utilization 122.8%

ICU Level of Service H

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

|                                                                                            |                                                                                          |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø2 (R)   |  Ø4   |
| 72 s                                                                                       | 18 s                                                                                     |
|  Ø6 (R) |  Ø8 |
| 72 s                                                                                       | 18 s                                                                                     |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive Background Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |    |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3 |
| Lane Configurations     |  |  |  |  |  |  |    |
| Traffic Volume (vph)    | 120                                                                               | 207                                                                               | 144                                                                               | 803                                                                               | 810                                                                               | 77                                                                                |    |
| Future Volume (vph)     | 120                                                                               | 207                                                                               | 144                                                                               | 803                                                                               | 810                                                                               | 77                                                                                |    |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |    |
| Lane Width (ft)         | 10                                                                                | 10                                                                                | 11                                                                                | 11                                                                                | 12                                                                                | 12                                                                                |    |
| Storage Length (ft)     | 0                                                                                 | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   | 0                                                                                 |    |
| Storage Lanes           | 1                                                                                 | 1                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |    |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |    |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              |    |
| Frt                     |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.987                                                                             |                                                                                   |    |
| Flt Protected           | 0.950                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |    |
| Satd. Flow (prot)       | 1652                                                                              | 1478                                                                              | 1711                                                                              | 1801                                                                              | 3493                                                                              | 0                                                                                 |    |
| Flt Permitted           | 0.950                                                                             |                                                                                   | 0.232                                                                             |                                                                                   |                                                                                   |                                                                                   |    |
| Satd. Flow (perm)       | 1652                                                                              | 1478                                                                              | 418                                                                               | 1801                                                                              | 3493                                                                              | 0                                                                                 |    |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |    |
| Satd. Flow (RTOR)       |                                                                                   | 230                                                                               |                                                                                   |                                                                                   | 13                                                                                |                                                                                   |    |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 35                                                                                |                                                                                   |    |
| Link Distance (ft)      | 445                                                                               |                                                                                   |                                                                                   | 510                                                                               | 341                                                                               |                                                                                   |    |
| Travel Time (s)         | 12.1                                                                              |                                                                                   |                                                                                   | 11.6                                                                              | 6.6                                                                               |                                                                                   |    |
| Peak Hour Factor        | 0.82                                                                              | 0.82                                                                              | 0.98                                                                              | 0.98                                                                              | 0.90                                                                              | 0.90                                                                              |    |
| Adj. Flow (vph)         | 146                                                                               | 252                                                                               | 147                                                                               | 819                                                                               | 900                                                                               | 86                                                                                |    |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |    |
| Lane Group Flow (vph)   | 146                                                                               | 252                                                                               | 147                                                                               | 819                                                                               | 986                                                                               | 0                                                                                 |    |
| Turn Type               | Prot                                                                              | Perm                                                                              | pm+pt                                                                             | NA                                                                                | NA                                                                                |                                                                                   |    |
| Protected Phases        | 4                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 | 2                                                                                 | 3                                                                                 |    |
| Permitted Phases        |                                                                                   | 4                                                                                 | 6                                                                                 |                                                                                   |                                                                                   |                                                                                   |    |
| Detector Phase          | 4                                                                                 | 4                                                                                 | 1                                                                                 | 6                                                                                 | 2                                                                                 |                                                                                   |    |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |    |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               | 5.0                                                                               | 15.0                                                                              | 15.0                                                                              | 7.0                                                                               |    |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              | 9.2                                                                               | 21.9                                                                              | 21.9                                                                              | 22.0                                                                              |    |
| Total Split (s)         | 13.0                                                                              | 13.0                                                                              | 11.2                                                                              | 55.0                                                                              | 43.8                                                                              | 22.0                                                                              |    |
| Total Split (%)         | 14.4%                                                                             | 14.4%                                                                             | 12.4%                                                                             | 61.1%                                                                             | 48.7%                                                                             | 24%                                                                               |    |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               | 3.2                                                                               | 4.9                                                                               | 4.9                                                                               | 4.0                                                                               |    |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 2.0                                                                               | 2.0                                                                               | 0.0                                                                               |    |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |    |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               | 4.2                                                                               | 6.9                                                                               | 6.9                                                                               |                                                                                   |    |
| Lead/Lag                | Lag                                                                               | Lag                                                                               | Lead                                                                              |                                                                                   | Lag                                                                               | Lead                                                                              |    |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |    |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | C-Max                                                                             | C-Max                                                                             | None                                                                              |    |
| Act Effct Green (s)     | 13.7                                                                              | 13.7                                                                              | 68.1                                                                              | 65.4                                                                              | 54.4                                                                              |                                                                                   |    |
| Actuated g/C Ratio      | 0.15                                                                              | 0.15                                                                              | 0.76                                                                              | 0.73                                                                              | 0.60                                                                              |                                                                                   |    |
| v/c Ratio               | 0.58                                                                              | 0.60                                                                              | 0.36                                                                              | 0.63                                                                              | 0.47                                                                              |                                                                                   |    |
| Control Delay           | 44.5                                                                              | 12.8                                                                              | 4.8                                                                               | 6.4                                                                               | 8.5                                                                               |                                                                                   |    |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |    |
| Total Delay             | 44.5                                                                              | 12.8                                                                              | 4.8                                                                               | 6.4                                                                               | 8.5                                                                               |                                                                                   |    |
| LOS                     | D                                                                                 | B                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   |    |
| Approach Delay          | 24.4                                                                              |                                                                                   |                                                                                   | 6.1                                                                               | 8.5                                                                               |                                                                                   |    |
| Approach LOS            | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |    |
| Queue Length 50th (ft)  | 78                                                                                | 11                                                                                | 13                                                                                | 122                                                                               | 166                                                                               |                                                                                   |    |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive Background Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Saturday Midday

|                         |  |  |  |  |  |  |    |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3 |
| Queue Length 95th (ft)  | 120                                                                               | 56                                                                                | 28                                                                                | 155                                                                               | 157                                                                               |                                                                                   |    |
| Internal Link Dist (ft) | 365                                                                               |                                                                                   |                                                                                   | 430                                                                               | 261                                                                               |                                                                                   |    |
| Turn Bay Length (ft)    |                                                                                   | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   |                                                                                   |    |
| Base Capacity (vph)     | 251                                                                               | 419                                                                               | 422                                                                               | 1308                                                                              | 2117                                                                              |                                                                                   |    |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |    |
| Reduced v/c Ratio       | 0.58                                                                              | 0.60                                                                              | 0.35                                                                              | 0.63                                                                              | 0.47                                                                              |                                                                                   |    |

## Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 88 (98%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 10.2

Intersection LOS: B

Intersection Capacity Utilization 58.8%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

|                                                                                            |                                                                                           |                                                                                       |                                                                                         |
|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|  Ø1      |  Ø2 (R) |  Ø3 |  Ø4 |
| 11.2 s                                                                                     | 43.8 s                                                                                    | 22 s                                                                                  | 13 s                                                                                    |
|  Ø6 (R) |                                                                                           |                                                                                       |                                                                                         |
| 55 s                                                                                       |                                                                                           |                                                                                       |                                                                                         |

# 103: Route 58 (Black Rock Turnpike) & Brookside Drive 2040 Background Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

| Lane Group              | EBL   | EBR  | NBL   | NBT   | SBT   | SBR  |
|-------------------------|-------|------|-------|-------|-------|------|
| Lane Configurations     | WT    |      |       | TT    | TT    |      |
| Traffic Volume (vph)    | 89    | 59   | 54    | 900   | 952   | 108  |
| Future Volume (vph)     | 89    | 59   | 54    | 900   | 952   | 108  |
| Ideal Flow (vphpl)      | 1900  | 1900 | 1900  | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 16    | 12   | 12    | 12    | 12    | 12   |
| Lane Util. Factor       | 1.00  | 1.00 | 0.95  | 0.95  | 0.95  | 0.95 |
| Frt                     | 0.946 |      |       |       | 0.985 |      |
| Flt Protected           | 0.971 |      |       | 0.997 |       |      |
| Satd. Flow (prot)       | 1939  | 0    | 0     | 3529  | 3486  | 0    |
| Flt Permitted           | 0.971 |      |       | 0.817 |       |      |
| Satd. Flow (perm)       | 1939  | 0    | 0     | 2892  | 3486  | 0    |
| Right Turn on Red       |       | Yes  |       |       |       | Yes  |
| Satd. Flow (RTOR)       | 33    |      |       |       | 24    |      |
| Link Speed (mph)        | 25    |      |       | 30    | 30    |      |
| Link Distance (ft)      | 347   |      |       | 293   | 336   |      |
| Travel Time (s)         | 9.5   |      |       | 6.7   | 7.6   |      |
| Peak Hour Factor        | 0.83  | 0.83 | 0.98  | 0.98  | 0.96  | 0.96 |
| Adj. Flow (vph)         | 107   | 71   | 55    | 918   | 992   | 113  |
| Shared Lane Traffic (%) |       |      |       |       |       |      |
| Lane Group Flow (vph)   | 178   | 0    | 0     | 973   | 1105  | 0    |
| Turn Type               | Prot  |      | pm+pt | NA    | NA    |      |
| Protected Phases        | 4     |      | 5     | 2     | 6     |      |
| Permitted Phases        |       |      | 2     |       |       |      |
| Detector Phase          | 4     |      | 5     | 2     | 6     |      |
| Switch Phase            |       |      |       |       |       |      |
| Minimum Initial (s)     | 9.0   |      | 3.0   | 15.0  | 15.0  |      |
| Minimum Split (s)       | 13.0  |      | 8.9   | 20.4  | 20.4  |      |
| Total Split (s)         | 22.0  |      | 8.9   | 68.0  | 59.1  |      |
| Total Split (%)         | 24.4% |      | 9.9%  | 75.6% | 65.7% |      |
| Yellow Time (s)         | 3.0   |      | 4.2   | 4.2   | 4.2   |      |
| All-Red Time (s)        | 1.0   |      | 1.7   | 1.2   | 1.2   |      |
| Lost Time Adjust (s)    | 0.0   |      |       | 0.0   | 0.0   |      |
| Total Lost Time (s)     | 4.0   |      |       | 5.4   | 5.4   |      |
| Lead/Lag                |       |      | Lag   |       | Lead  |      |
| Lead-Lag Optimize?      |       |      | Yes   |       | Yes   |      |
| Recall Mode             | None  |      | None  | C-Max | C-Max |      |
| Act Effect Green (s)    | 11.7  |      |       | 68.9  | 68.9  |      |
| Actuated g/C Ratio      | 0.13  |      |       | 0.77  | 0.77  |      |
| v/c Ratio               | 0.63  |      |       | 0.44  | 0.41  |      |
| Control Delay           | 40.0  |      |       | 3.6   | 2.6   |      |
| Queue Delay             | 0.0   |      |       | 0.1   | 0.0   |      |
| Total Delay             | 40.0  |      |       | 3.7   | 2.6   |      |
| LOS                     | D     |      |       | A     | A     |      |
| Approach Delay          | 40.0  |      |       | 3.7   | 2.6   |      |
| Approach LOS            | D     |      |       | A     | A     |      |
| Queue Length 50th (ft)  | 79    |      |       | 65    | 30    |      |
| Queue Length 95th (ft)  | 124   |      |       | 100   | 88    |      |
| Internal Link Dist (ft) | 267   |      |       | 213   | 256   |      |
| Turn Bay Length (ft)    |       |      |       |       |       |      |



# 103: Route 58 (Black Rock Turnpike) & Brookside Drive 2040 Background Optimized Conditions

Timing Plan: Saturday MIDDAY

|                        |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Base Capacity (vph)    | 414                                                                               |                                                                                   |                                                                                   | 2212                                                                              | 2672                                                                              |                                                                                   |
| Starvation Cap Reductn | 0                                                                                 |                                                                                   |                                                                                   | 383                                                                               | 0                                                                                 |                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |
| Storage Cap Reductn    | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |
| Reduced v/c Ratio      | 0.43                                                                              |                                                                                   |                                                                                   | 0.53                                                                              | 0.41                                                                              |                                                                                   |

## Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 6.0

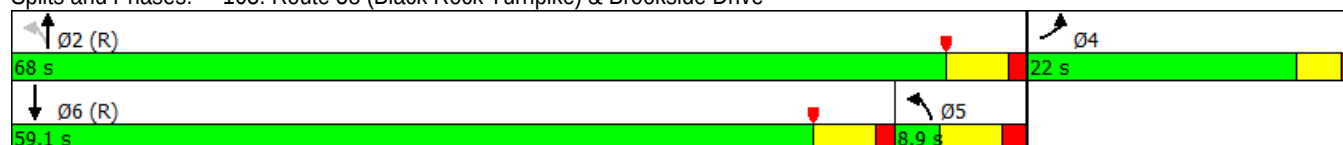
Intersection LOS: A

Intersection Capacity Utilization 77.1%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive



# 104: Route 58 (Black Rock Turnpike) & Commercial Drive at Blackfield Woods Road Conditions Lanes, Volumes, Timings

Timing Plan: Saturday Midday

| Lane Group              | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|------|
| Lane Configurations     |       |       |       |       |       |       |       |       |      |       |       |      |
| Traffic Volume (vph)    | 36    | 19    | 42    | 88    | 22    | 131   | 36    | 835   | 75   | 108   | 881   | 43   |
| Future Volume (vph)     | 36    | 19    | 42    | 88    | 22    | 131   | 36    | 835   | 75   | 108   | 881   | 43   |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12    | 12    | 12    | 12    | 12    | 11    | 12    | 11    | 12   | 12    | 11    | 12   |
| Storage Length (ft)     | 0     |       | 0     | 0     |       | 75    | 0     |       | 0    | 0     |       | 0    |
| Storage Lanes           | 0     |       | 1     | 0     |       | 1     | 0     |       | 0    | 0     |       | 0    |
| Taper Length (ft)       | 25    |       |       | 25    |       |       | 25    |       |      | 25    |       |      |
| Lane Util. Factor       | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 0.95  | 0.95  | 0.95 | 0.95  | 0.95  | 0.95 |
| Frt                     |       |       | 0.850 |       |       | 0.850 |       | 0.988 |      |       | 0.994 |      |
| Flt Protected           |       | 0.968 |       |       | 0.962 |       |       | 0.998 |      |       | 0.995 |      |
| Satd. Flow (prot)       | 0     | 1803  | 1583  | 0     | 1792  | 1531  | 0     | 3373  | 0    | 0     | 3384  | 0    |
| Flt Permitted           |       | 0.734 |       |       | 0.727 |       |       | 0.874 |      |       | 0.716 |      |
| Satd. Flow (perm)       | 0     | 1367  | 1583  | 0     | 1354  | 1531  | 0     | 2954  | 0    | 0     | 2435  | 0    |
| Right Turn on Red       |       |       | Yes   |       |       | No    |       |       | Yes  |       |       | Yes  |
| Satd. Flow (RTOR)       |       |       | 107   |       |       |       |       | 17    |      |       | 11    |      |
| Link Speed (mph)        |       | 30    |       |       | 25    |       |       | 30    |      |       | 30    |      |
| Link Distance (ft)      |       | 87    |       |       | 499   |       |       | 713   |      |       | 293   |      |
| Travel Time (s)         |       | 2.0   |       |       | 13.6  |       |       | 16.2  |      |       | 6.7   |      |
| Peak Hour Factor        | 0.88  | 0.88  | 0.88  | 0.80  | 0.80  | 0.80  | 0.97  | 0.97  | 0.97 | 0.96  | 0.96  | 0.96 |
| Adj. Flow (vph)         | 41    | 22    | 48    | 110   | 28    | 164   | 37    | 861   | 77   | 113   | 918   | 45   |
| Shared Lane Traffic (%) |       |       |       |       |       |       |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 0     | 63    | 48    | 0     | 138   | 164   | 0     | 975   | 0    | 0     | 1076  | 0    |
| Turn Type               | Perm  | NA    | Perm  | Perm  | NA    | Perm  | Perm  | NA    |      | pm+pt | NA    |      |
| Protected Phases        |       | 4     |       |       | 8     |       |       | 2     |      | 1     | 6     |      |
| Permitted Phases        | 4     |       | 4     | 8     |       | 8     | 2     |       |      | 6     |       |      |
| Detector Phase          | 4     | 4     | 4     | 8     | 8     | 8     | 2     | 2     |      | 1     | 6     |      |
| Switch Phase            |       |       |       |       |       |       |       |       |      |       |       |      |
| Minimum Initial (s)     | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 15.0  | 15.0  |      | 3.0   | 15.0  |      |
| Minimum Split (s)       | 13.0  | 13.0  | 13.0  | 13.0  | 13.0  | 13.0  | 20.3  | 20.3  |      | 9.5   | 20.3  |      |
| Total Split (s)         | 23.0  | 23.0  | 23.0  | 23.0  | 23.0  | 23.0  | 57.5  | 57.5  |      | 9.5   | 67.0  |      |
| Total Split (%)         | 25.6% | 25.6% | 25.6% | 25.6% | 25.6% | 25.6% | 63.9% | 63.9% |      | 10.6% | 74.4% |      |
| Yellow Time (s)         | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 4.3   | 4.3   |      | 4.3   | 4.3   |      |
| All-Red Time (s)        | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |      | 2.2   | 1.0   |      |
| Lost Time Adjust (s)    |       | 0.0   | 0.0   |       | 0.0   | 0.0   |       | 0.0   |      |       | 0.0   |      |
| Total Lost Time (s)     |       | 4.0   | 4.0   |       | 4.0   | 4.0   |       | 5.3   |      |       | 5.3   |      |
| Lead/Lag                |       |       |       |       |       |       | Lead  | Lead  |      | Lag   |       |      |
| Lead-Lag Optimize?      |       |       |       |       |       |       | Yes   | Yes   |      | Yes   |       |      |
| Recall Mode             | None  | None  | None  | None  | None  | None  | C-Max | C-Max |      | None  | C-Max |      |
| Act Effct Green (s)     |       | 14.0  | 14.0  |       | 14.0  | 14.0  |       | 66.7  |      |       | 66.7  |      |
| Actuated g/C Ratio      |       | 0.16  | 0.16  |       | 0.16  | 0.16  |       | 0.74  |      |       | 0.74  |      |
| v/c Ratio               |       | 0.30  | 0.14  |       | 0.66  | 0.69  |       | 0.44  |      |       | 0.60  |      |
| Control Delay           |       | 35.8  | 0.9   |       | 50.1  | 50.6  |       | 5.6   |      |       | 4.2   |      |
| Queue Delay             |       | 0.0   | 0.0   |       | 0.0   | 0.0   |       | 0.0   |      |       | 0.0   |      |
| Total Delay             |       | 35.8  | 0.9   |       | 50.1  | 50.6  |       | 5.6   |      |       | 4.2   |      |
| LOS                     |       | D     | A     |       | D     | D     |       | A     |      |       | A     |      |
| Approach Delay          |       | 20.7  |       |       | 50.4  |       |       | 5.6   |      |       | 4.2   |      |
| Approach LOS            |       | C     |       |       | D     |       |       | A     |      |       | A     |      |
| Queue Length 50th (ft)  |       | 32    | 0     |       | 75    | 89    |       | 90    |      |       | 28    |      |

# 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road Conditions Lanes, Volumes, Timings

Timing Plan: Saturday Midday

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 64                                                                                | 0                                                                                 |                                                                                   | 111                                                                               | 127                                                                               |                                                                                    | 154                                                                                 |                                                                                     |                                                                                     | 125                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 7                                                                                 |                                                                                   |                                                                                   | 419                                                                               |                                                                                   |                                                                                    | 633                                                                                 |                                                                                     |                                                                                     | 213                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 75                                                                                |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 288                                                                               | 418                                                                               |                                                                                   | 285                                                                               | 323                                                                               |                                                                                    | 2194                                                                                |                                                                                     |                                                                                     | 1807                                                                                |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.22                                                                              | 0.11                                                                              |                                                                                   | 0.48                                                                              | 0.51                                                                              |                                                                                    | 0.44                                                                                |                                                                                     |                                                                                     | 0.60                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 4 (4%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 11.1

Intersection LOS: B

Intersection Capacity Utilization 80.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road

|                                                                                            |                                                                                          |                                                                                         |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|  Ø2 (R)  |  Ø1  |  Ø4 |
| 57.5 s                                                                                     | 9.5 s                                                                                    | 23 s                                                                                    |
|  Ø6 (R) |  Ø8 |                                                                                         |
| 67 s                                                                                       |                                                                                          | 23 s                                                                                    |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 520 (Black Rock Turnpike) - Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

| Lane Group              | EBL   | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
|-------------------------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|
| Lane Configurations     |       |       |      |       |       |      |       |       |      |       |       |      |
| Traffic Volume (vph)    | 86    | 679   | 171  | 142   | 657   | 160  | 233   | 210   | 157  | 241   | 275   | 61   |
| Future Volume (vph)     | 86    | 679   | 171  | 142   | 657   | 160  | 233   | 210   | 157  | 241   | 275   | 61   |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 11    | 11    | 12   | 11    | 12    | 12   | 11    | 11    | 12   | 12    | 12    | 12   |
| Storage Length (ft)     | 200   |       | 0    | 175   |       | 0    | 210   |       | 0    | 170   |       | 0    |
| Storage Lanes           | 1     |       | 0    | 1     |       | 0    | 1     |       | 0    | 1     |       | 0    |
| Taper Length (ft)       | 85    |       |      | 75    |       |      | 100   |       |      | 100   |       |      |
| Lane Util. Factor       | 1.00  | 0.95  | 0.95 | 1.00  | 0.95  | 0.95 | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 |
| Frt                     |       | 0.970 |      |       | 0.971 |      |       | 0.936 |      |       | 0.973 |      |
| Flt Protected           | 0.950 |       |      | 0.950 |       |      | 0.950 |       |      | 0.950 |       |      |
| Satd. Flow (prot)       | 1711  | 3319  | 0    | 1711  | 3437  | 0    | 1711  | 1685  | 0    | 1770  | 1812  | 0    |
| Flt Permitted           | 0.950 |       |      | 0.950 |       |      | 0.284 |       |      | 0.182 |       |      |
| Satd. Flow (perm)       | 1711  | 3319  | 0    | 1711  | 3437  | 0    | 511   | 1685  | 0    | 339   | 1812  | 0    |
| Right Turn on Red       |       |       | Yes  |       |       | Yes  |       |       | Yes  |       |       | No   |
| Satd. Flow (RTOR)       |       | 20    |      |       | 20    |      |       | 23    |      |       |       |      |
| Link Speed (mph)        |       | 30    |      |       | 30    |      |       | 30    |      |       | 25    |      |
| Link Distance (ft)      |       | 436   |      |       | 368   |      |       | 438   |      |       | 355   |      |
| Travel Time (s)         |       | 9.9   |      |       | 8.4   |      |       | 10.0  |      |       | 9.7   |      |
| Peak Hour Factor        | 0.90  | 0.90  | 0.90 | 0.91  | 0.91  | 0.91 | 0.90  | 0.90  | 0.90 | 0.88  | 0.88  | 0.88 |
| Adj. Flow (vph)         | 96    | 754   | 190  | 156   | 722   | 176  | 259   | 233   | 174  | 274   | 313   | 69   |
| Shared Lane Traffic (%) |       |       |      |       |       |      |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 96    | 944   | 0    | 156   | 898   | 0    | 259   | 407   | 0    | 274   | 382   | 0    |
| Turn Type               | Prot  | NA    |      | Prot  | NA    |      | pm+pt | NA    |      | pm+pt | NA    |      |
| Protected Phases        | 5     | 2     |      | 1     | 6     |      | 7     | 4     |      | 3     | 8     |      |
| Permitted Phases        |       |       |      |       |       |      | 4     |       |      | 8     |       |      |
| Detector Phase          | 5     | 2     |      | 1     | 6     |      | 7     | 4     |      | 3     | 8     |      |
| Switch Phase            |       |       |      |       |       |      |       |       |      |       |       |      |
| Minimum Initial (s)     | 5.0   | 15.0  |      | 5.0   | 15.0  |      | 5.0   | 10.0  |      | 5.0   | 10.0  |      |
| Minimum Split (s)       | 9.7   | 21.6  |      | 9.7   | 21.6  |      | 9.3   | 16.8  |      | 9.3   | 16.8  |      |
| Total Split (s)         | 13.2  | 42.0  |      | 16.0  | 44.8  |      | 17.0  | 35.0  |      | 19.0  | 37.0  |      |
| Total Split (%)         | 9.1%  | 29.0% |      | 11.0% | 30.9% |      | 11.7% | 24.1% |      | 13.1% | 25.5% |      |
| Yellow Time (s)         | 3.0   | 4.1   |      | 3.0   | 4.1   |      | 3.3   | 4.4   |      | 3.3   | 4.4   |      |
| All-Red Time (s)        | 1.7   | 2.5   |      | 1.7   | 2.5   |      | 1.0   | 2.4   |      | 1.0   | 2.4   |      |
| Lost Time Adjust (s)    | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      |
| Total Lost Time (s)     | 4.7   | 6.6   |      | 4.7   | 6.6   |      | 4.3   | 6.8   |      | 4.3   | 6.8   |      |
| Lead/Lag                | Lead  | Lag   |      | Lead  | Lag   |      | Lead  | Lag   |      | Lead  | Lag   |      |
| Lead-Lag Optimize?      | Yes   | Yes   |      | Yes   | Yes   |      | Yes   | Yes   |      | Yes   | Yes   |      |
| Recall Mode             | None  | Min   |      | None  | Min   |      | None  | None  |      | None  | None  |      |
| Act Effct Green (s)     | 8.5   | 35.4  |      | 11.3  | 38.2  |      | 43.4  | 28.2  |      | 47.4  | 30.2  |      |
| Actuated g/C Ratio      | 0.08  | 0.32  |      | 0.10  | 0.34  |      | 0.39  | 0.25  |      | 0.42  | 0.27  |      |
| v/c Ratio               | 0.74  | 0.89  |      | 0.91  | 0.76  |      | 0.78  | 0.92  |      | 0.83  | 0.78  |      |
| Control Delay           | 83.5  | 47.3  |      | 98.6  | 37.0  |      | 39.1  | 66.8  |      | 43.7  | 50.6  |      |
| Queue Delay             | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      |
| Total Delay             | 83.5  | 47.3  |      | 98.6  | 37.0  |      | 39.1  | 66.8  |      | 43.7  | 50.6  |      |
| LOS                     | F     | D     |      | F     | D     |      | D     | E     |      | D     | D     |      |
| Approach Delay          |       | 50.6  |      |       | 46.1  |      |       | 56.0  |      |       | 47.7  |      |
| Approach LOS            |       | D     |      |       | D     |      |       | E     |      |       | D     |      |
| Queue Length 50th (ft)  | 69    | 332   |      | 113   | 294   |      | 119   | 272   |      | 127   | 255   |      |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 520 (Black Rock Turnpike)

Timing Plan: Saturday MIDDAY

| Lane Group              | Ø9   |
|-------------------------|------|
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 33.0 |
| Total Split (s)         | 33.0 |
| Total Split (%)         | 23%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  | #155                                                                              | #450                                                                              |                                                                                   | #238                                                                              | 371                                                                               |                                                                                   | #193                                                                               | #462                                                                                |                                                                                     | #242                                                                                | #367                                                                                |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 356                                                                               |                                                                                   |                                                                                   | 288                                                                               |                                                                                   |                                                                                    | 358                                                                                 |                                                                                     |                                                                                     | 275                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 200                                                                               |                                                                                   |                                                                                   | 175                                                                               |                                                                                   |                                                                                   | 210                                                                                |                                                                                     |                                                                                     | 170                                                                                 |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 129                                                                               | 1062                                                                              |                                                                                   | 172                                                                               | 1185                                                                              |                                                                                   | 334                                                                                | 441                                                                                 |                                                                                     | 331                                                                                 | 488                                                                                 |                                                                                     |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       | 0.74                                                                              | 0.89                                                                              |                                                                                   | 0.91                                                                              | 0.76                                                                              |                                                                                   | 0.78                                                                               | 0.92                                                                                |                                                                                     | 0.83                                                                                | 0.78                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 145

Actuated Cycle Length: 112

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 49.7

Intersection LOS: D

Intersection Capacity Utilization 84.8%

ICU Level of Service E

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)

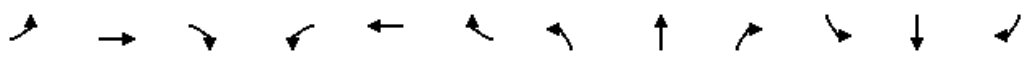
|                                                                                        |                                                                                        |                                                                                        |                                                                                         |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø9 |  Ø3 |  Ø4 |
| 16 s                                                                                   | 42 s                                                                                   | 33 s                                                                                   | 19 s                                                                                    | 35 s                                                                                     |
|  Ø5 |  Ø6 |                                                                                        |  Ø7 |  Ø8 |
| 13.2 s                                                                                 | 44.8 s                                                                                 |                                                                                        | 17 s                                                                                    | 37 s                                                                                     |



|                         |    |
|-------------------------|----|
| Lane Group              | Ø9 |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza 2040 Daily & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Saturday Midday

|                         |  |       |      |       |       |      |       |       |       |       |       |       |
|-------------------------|------------------------------------------------------------------------------------|-------|------|-------|-------|------|-------|-------|-------|-------|-------|-------|
| Lane Group              | EBL                                                                                | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
| Lane Configurations     |                                                                                    | ↔     |      |       | ↔     |      |       | ↔     | ↔     |       | ↔     | ↔     |
| Traffic Volume (vph)    | 94                                                                                 | 795   | 48   | 80    | 755   | 95   | 171   | 23    | 135   | 78    | 20    | 41    |
| Future Volume (vph)     | 94                                                                                 | 795   | 48   | 80    | 755   | 95   | 171   | 23    | 135   | 78    | 20    | 41    |
| Ideal Flow (vphpl)      | 1900                                                                               | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  |
| Lane Width (ft)         | 12                                                                                 | 11    | 12   | 12    | 11    | 12   | 12    | 13    | 13    | 12    | 13    | 13    |
| Storage Length (ft)     | 0                                                                                  |       | 0    | 0     |       | 0    | 0     |       | 25    | 0     |       | 25    |
| Storage Lanes           | 0                                                                                  |       | 0    | 0     |       | 0    | 0     |       | 1     | 0     |       | 1     |
| Taper Length (ft)       | 25                                                                                 |       |      | 25    |       |      | 25    |       |       | 25    |       |       |
| Lane Util. Factor       | 0.95                                                                               | 0.95  | 0.95 | 0.95  | 0.95  | 0.95 | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Frt                     |                                                                                    | 0.992 |      |       | 0.985 |      |       |       | 0.850 |       |       | 0.850 |
| Flt Protected           |                                                                                    | 0.995 |      |       | 0.996 |      |       | 0.958 |       |       | 0.962 |       |
| Satd. Flow (prot)       | 0                                                                                  | 3377  | 0    | 0     | 3356  | 0    | 0     | 1844  | 1636  | 0     | 1852  | 1636  |
| Flt Permitted           |                                                                                    | 0.659 |      |       | 0.752 |      |       | 0.651 |       |       | 0.594 |       |
| Satd. Flow (perm)       | 0                                                                                  | 2237  | 0    | 0     | 2534  | 0    | 0     | 1253  | 1636  | 0     | 1143  | 1636  |
| Right Turn on Red       |                                                                                    |       | Yes  |       |       | Yes  |       |       | Yes   |       |       | Yes   |
| Satd. Flow (RTOR)       |                                                                                    | 8     |      |       | 16    |      |       |       | 131   |       |       | 131   |
| Link Speed (mph)        |                                                                                    | 30    |      |       | 30    |      |       | 25    |       |       | 25    |       |
| Link Distance (ft)      |                                                                                    | 442   |      |       | 502   |      |       | 142   |       |       | 135   |       |
| Travel Time (s)         |                                                                                    | 10.0  |      |       | 11.4  |      |       | 3.9   |       |       | 3.7   |       |
| Peak Hour Factor        | 0.96                                                                               | 0.96  | 0.96 | 0.95  | 0.95  | 0.95 | 0.92  | 0.92  | 0.92  | 0.81  | 0.81  | 0.81  |
| Adj. Flow (vph)         | 98                                                                                 | 828   | 50   | 84    | 795   | 100  | 186   | 25    | 147   | 96    | 25    | 51    |
| Shared Lane Traffic (%) |                                                                                    |       |      |       |       |      |       |       |       |       |       |       |
| Lane Group Flow (vph)   | 0                                                                                  | 976   | 0    | 0     | 979   | 0    | 0     | 211   | 147   | 0     | 121   | 51    |
| Turn Type               | pm+pt                                                                              | NA    |      | Perm  | NA    |      | Perm  | NA    | Perm  | Perm  | NA    | Perm  |
| Protected Phases        | 1                                                                                  | 6     |      |       | 2     |      |       | 4     |       |       | 4     |       |
| Permitted Phases        | 6                                                                                  |       |      | 2     |       |      | 4     |       | 4     | 4     |       | 4     |
| Detector Phase          | 1                                                                                  | 6     |      | 2     | 2     |      | 4     | 4     | 4     | 4     | 4     | 4     |
| Switch Phase            |                                                                                    |       |      |       |       |      |       |       |       |       |       |       |
| Minimum Initial (s)     | 5.0                                                                                | 15.0  |      | 15.0  | 15.0  |      | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   |
| Minimum Split (s)       | 9.0                                                                                | 20.8  |      | 20.8  | 20.8  |      | 11.0  | 11.0  | 11.0  | 11.0  | 11.0  | 11.0  |
| Total Split (s)         | 9.0                                                                                | 49.0  |      | 40.0  | 40.0  |      | 19.0  | 19.0  | 19.0  | 19.0  | 19.0  | 19.0  |
| Total Split (%)         | 10.0%                                                                              | 54.4% |      | 44.4% | 44.4% |      | 21.1% | 21.1% | 21.1% | 21.1% | 21.1% | 21.1% |
| Yellow Time (s)         | 3.0                                                                                | 4.3   |      | 4.3   | 4.3   |      | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |
| All-Red Time (s)        | 1.0                                                                                | 1.5   |      | 1.5   | 1.5   |      | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s)    |                                                                                    | 0.0   |      |       | 0.0   |      |       | 0.0   | 0.0   |       | 0.0   | 0.0   |
| Total Lost Time (s)     |                                                                                    | 5.8   |      |       | 5.8   |      |       | 4.0   | 4.0   |       | 4.0   | 4.0   |
| Lead/Lag                | Lead                                                                               |       |      | Lag   | Lag   |      | Lag   | Lag   | Lag   | Lag   | Lag   | Lag   |
| Lead-Lag Optimize?      | Yes                                                                                |       |      | Yes   | Yes   |      | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Recall Mode             | Min                                                                                | C-Max |      | C-Max | C-Max |      | None  | None  | None  | None  | None  | None  |
| Act Effct Green (s)     |                                                                                    | 54.5  |      |       | 45.0  |      |       | 25.7  | 25.7  |       | 25.7  | 25.7  |
| Actuated g/C Ratio      |                                                                                    | 0.61  |      |       | 0.50  |      |       | 0.29  | 0.29  |       | 0.29  | 0.29  |
| v/c Ratio               |                                                                                    | 0.70  |      |       | 0.77  |      |       | 0.59  | 0.26  |       | 0.37  | 0.09  |
| Control Delay           |                                                                                    | 14.6  |      |       | 12.1  |      |       | 35.3  | 7.1   |       | 29.5  | 0.3   |
| Queue Delay             |                                                                                    | 0.0   |      |       | 0.0   |      |       | 0.0   | 0.0   |       | 0.0   | 0.0   |
| Total Delay             |                                                                                    | 14.6  |      |       | 12.1  |      |       | 35.3  | 7.1   |       | 29.5  | 0.3   |
| LOS                     |                                                                                    | B     |      |       | B     |      |       | D     | A     |       | C     | A     |
| Approach Delay          |                                                                                    | 14.6  |      |       | 12.1  |      |       | 23.8  |       |       | 20.8  |       |
| Approach LOS            |                                                                                    | B     |      |       | B     |      |       | C     |       |       | C     |       |
| Queue Length 50th (ft)  |                                                                                    | 143   |      |       | 42    |      |       | 104   | 7     |       | 55    | 0     |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza 2040 Bwy & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

| Lane Group              | Ø3   |
|-------------------------|------|
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 3    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 22.0 |
| Total Split (s)         | 22.0 |
| Total Split (%)         | 24%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                | Lead |
| Lead-Lag Optimize?      | Yes  |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 202                                                                               |                                                                                   |                                                                                   | 119                                                                               |                                                                                   |                                                                                    | 174                                                                                 | 49                                                                                  |                                                                                     | 90                                                                                  | 0                                                                                   |
| Internal Link Dist (ft) |                                                                                   | 362                                                                               |                                                                                   |                                                                                   | 422                                                                               |                                                                                   |                                                                                    | 62                                                                                  |                                                                                     |                                                                                     | 55                                                                                  |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |
| Base Capacity (vph)     |                                                                                   | 1404                                                                              |                                                                                   |                                                                                   | 1274                                                                              |                                                                                   |                                                                                    | 358                                                                                 | 561                                                                                 |                                                                                     | 326                                                                                 | 561                                                                                 |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       |                                                                                   | 0.70                                                                              |                                                                                   |                                                                                   | 0.77                                                                              |                                                                                   |                                                                                    | 0.59                                                                                | 0.26                                                                                |                                                                                     | 0.37                                                                                | 0.09                                                                                |

## Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 82 (91%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 15.4

Intersection LOS: B

Intersection Capacity Utilization 82.8%

ICU Level of Service E

Analysis Period (min) 15

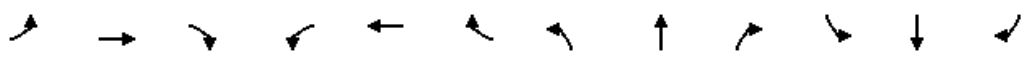
Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                           |                                                                                       |                                                                                         |
|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|  Ø1      |  Ø2 (R) |  Ø3 |  Ø4 |
| 9 s                                                                                        | 40 s                                                                                      | 22 s                                                                                  | 19 s                                                                                    |
|  Ø6 (R) |                                                                                           |                                                                                       |                                                                                         |
| 49 s                                                                                       |                                                                                           |                                                                                       |                                                                                         |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø3 |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |

# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) and Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |       |      |       |       |      |       |       |       |       |       |      |
|-------------------------|------------------------------------------------------------------------------------|-------|------|-------|-------|------|-------|-------|-------|-------|-------|------|
| Lane Group              | EBL                                                                                | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR   | SBL   | SBT   | SBR  |
| Lane Configurations     |                                                                                    | ↔↔    |      |       | ↔↔    |      |       | ↔     | ↔     | ↔     | ↔     |      |
| Traffic Volume (vph)    | 12                                                                                 | 901   | 130  | 58    | 884   | 0    | 122   | 3     | 52    | 3     | 1     | 10   |
| Future Volume (vph)     | 12                                                                                 | 901   | 130  | 58    | 884   | 0    | 122   | 3     | 52    | 3     | 1     | 10   |
| Ideal Flow (vphpl)      | 1900                                                                               | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12                                                                                 | 11    | 12   | 12    | 11    | 12   | 12    | 10    | 10    | 12    | 12    | 12   |
| Storage Length (ft)     | 0                                                                                  |       | 0    | 0     |       | 0    | 0     |       | 250   | 0     |       | 0    |
| Storage Lanes           | 0                                                                                  |       | 0    | 0     |       | 0    | 0     |       | 1     | 1     |       | 0    |
| Taper Length (ft)       | 25                                                                                 |       |      | 25    |       |      | 25    |       |       | 25    |       |      |
| Lane Util. Factor       | 0.95                                                                               | 0.95  | 0.95 | 0.95  | 0.95  | 0.95 | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00 |
| Frt                     |                                                                                    | 0.981 |      |       |       |      |       |       | 0.850 |       | 0.862 |      |
| Flt Protected           |                                                                                    | 0.999 |      |       | 0.997 |      |       | 0.953 |       | 0.950 |       |      |
| Satd. Flow (prot)       | 0                                                                                  | 3353  | 0    | 0     | 3411  | 0    | 0     | 1657  | 1478  | 1770  | 1606  | 0    |
| Flt Permitted           |                                                                                    | 0.944 |      |       | 0.785 |      |       | 0.723 |       | 0.625 |       |      |
| Satd. Flow (perm)       | 0                                                                                  | 3168  | 0    | 0     | 2686  | 0    | 0     | 1257  | 1478  | 1164  | 1606  | 0    |
| Right Turn on Red       |                                                                                    |       | Yes  |       |       | Yes  |       |       | Yes   |       |       | Yes  |
| Satd. Flow (RTOR)       |                                                                                    | 37    |      |       |       |      |       |       | 92    |       | 11    |      |
| Link Speed (mph)        |                                                                                    | 30    |      |       | 30    |      |       | 25    |       |       | 25    |      |
| Link Distance (ft)      |                                                                                    | 502   |      |       | 407   |      |       | 423   |       |       | 198   |      |
| Travel Time (s)         |                                                                                    | 11.4  |      |       | 9.3   |      |       | 11.5  |       |       | 5.4   |      |
| Peak Hour Factor        | 0.90                                                                               | 0.90  | 0.90 | 0.97  | 0.97  | 0.97 | 0.98  | 0.98  | 0.98  | 0.88  | 0.88  | 0.88 |
| Adj. Flow (vph)         | 13                                                                                 | 1001  | 144  | 60    | 911   | 0    | 124   | 3     | 53    | 3     | 1     | 11   |
| Shared Lane Traffic (%) |                                                                                    |       |      |       |       |      |       |       |       |       |       |      |
| Lane Group Flow (vph)   | 0                                                                                  | 1158  | 0    | 0     | 971   | 0    | 0     | 127   | 53    | 3     | 12    | 0    |
| Turn Type               | pm+pt                                                                              | NA    |      | Perm  | NA    |      | Perm  | NA    | Perm  | Perm  | NA    |      |
| Protected Phases        | 1                                                                                  | 6     |      |       | 2     |      |       | 4     |       |       | 4     |      |
| Permitted Phases        | 6                                                                                  |       |      | 2     |       |      | 4     |       | 4     | 4     |       |      |
| Detector Phase          | 1                                                                                  | 6     |      | 2     | 2     |      | 4     | 4     | 4     | 4     | 4     |      |
| Switch Phase            |                                                                                    |       |      |       |       |      |       |       |       |       |       |      |
| Minimum Initial (s)     | 3.0                                                                                | 15.0  |      | 15.0  | 15.0  |      | 7.0   | 7.0   | 7.0   | 7.0   | 7.0   |      |
| Minimum Split (s)       | 7.3                                                                                | 21.3  |      | 21.3  | 21.3  |      | 11.9  | 11.9  | 11.9  | 11.9  | 11.9  |      |
| Total Split (s)         | 7.3                                                                                | 66.0  |      | 58.7  | 58.7  |      | 24.0  | 24.0  | 24.0  | 24.0  | 24.0  |      |
| Total Split (%)         | 8.1%                                                                               | 73.3% |      | 65.2% | 65.2% |      | 26.7% | 26.7% | 26.7% | 26.7% | 26.7% |      |
| Yellow Time (s)         | 3.3                                                                                | 5.0   |      | 5.0   | 5.0   |      | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |      |
| All-Red Time (s)        | 1.0                                                                                | 1.3   |      | 1.3   | 1.3   |      | 1.9   | 1.9   | 1.9   | 1.9   | 1.9   |      |
| Lost Time Adjust (s)    |                                                                                    | 0.0   |      |       | 0.0   |      |       | 0.0   | 0.0   | 0.0   | 0.0   |      |
| Total Lost Time (s)     |                                                                                    | 6.3   |      |       | 6.3   |      |       | 4.9   | 4.9   | 4.9   | 4.9   |      |
| Lead/Lag                | Lead                                                                               |       |      | Lag   | Lag   |      |       |       |       |       |       |      |
| Lead-Lag Optimize?      | Yes                                                                                |       |      | Yes   | Yes   |      |       |       |       |       |       |      |
| Recall Mode             | Max                                                                                | C-Max |      | C-Max | C-Max |      | None  | None  | None  | None  | None  |      |
| Act Effect Green (s)    |                                                                                    | 66.0  |      |       | 52.4  |      |       | 12.8  | 12.8  | 12.8  | 12.8  |      |
| Actuated g/C Ratio      |                                                                                    | 0.73  |      |       | 0.58  |      |       | 0.14  | 0.14  | 0.14  | 0.14  |      |
| v/c Ratio               |                                                                                    | 0.49  |      |       | 0.62  |      |       | 0.71  | 0.18  | 0.02  | 0.05  |      |
| Control Delay           |                                                                                    | 4.2   |      |       | 7.8   |      |       | 57.0  | 3.5   | 30.0  | 17.0  |      |
| Queue Delay             |                                                                                    | 0.2   |      |       | 0.0   |      |       | 0.0   | 0.0   | 0.0   | 0.0   |      |
| Total Delay             |                                                                                    | 4.4   |      |       | 7.8   |      |       | 57.0  | 3.5   | 30.0  | 17.0  |      |
| LOS                     |                                                                                    | A     |      |       | A     |      |       | E     | A     | C     | B     |      |
| Approach Delay          |                                                                                    | 4.4   |      |       | 7.8   |      |       | 41.3  |       |       | 19.6  |      |
| Approach LOS            |                                                                                    | A     |      |       | A     |      |       | D     |       |       | B     |      |
| Queue Length 50th (ft)  |                                                                                    | 91    |      |       | 131   |      |       | 70    | 0     | 2     | 1     |      |



# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) and Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 120                                                                               |                                                                                   |                                                                                   | 39                                                                                |                                                                                   |                                                                                    | 120                                                                                 | 11                                                                                  | 8                                                                                   | 14                                                                                  |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 422                                                                               |                                                                                   |                                                                                   | 327                                                                               |                                                                                   |                                                                                    | 343                                                                                 |                                                                                     |                                                                                     | 118                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 250                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 2346                                                                              |                                                                                   |                                                                                   | 1563                                                                              |                                                                                   |                                                                                    | 266                                                                                 | 386                                                                                 | 247                                                                                 | 349                                                                                 |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 368                                                                               |                                                                                   |                                                                                   | 12                                                                                |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.59                                                                              |                                                                                   |                                                                                   | 0.63                                                                              |                                                                                   |                                                                                    | 0.48                                                                                | 0.14                                                                                | 0.01                                                                                | 0.03                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 81 (90%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 8.8

Intersection LOS: A

Intersection Capacity Utilization 83.7%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                           |                                                                                         |
|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|  Ø1      |  Ø2 (R) |  Ø4 |
| 7.3 s                                                                                      | 58.7 s                                                                                    | 24 s                                                                                    |
|  Ø6 (R) |                                                                                           |                                                                                         |
| 66 s                                                                                       |                                                                                           |                                                                                         |

# 108: Burroughs Road & Route 58 (Black Rock Turnpike) 2040 Background Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Saturday Midday

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 80                                                                                | 874                                                                               | 15                                                                                | 4                                                                                 | 861                                                                               | 112                                                                               | 20                                                                                 | 64                                                                                  | 10                                                                                  | 126                                                                                 | 52                                                                                  | 65                                                                                  |
| Future Volume (vph)     | 80                                                                                | 874                                                                               | 15                                                                                | 4                                                                                 | 861                                                                               | 112                                                                               | 20                                                                                 | 64                                                                                  | 10                                                                                  | 126                                                                                 | 52                                                                                  | 65                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                 | 16                                                                                  | 12                                                                                  | 12                                                                                  | 16                                                                                  | 12                                                                                  |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   | 0.983                                                                             |                                                                                   |                                                                                    | 0.986                                                                               |                                                                                     |                                                                                     | 0.964                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 0.989                                                                               |                                                                                     |                                                                                     | 0.975                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3401                                                                              | 0                                                                                 | 0                                                                                 | 3363                                                                              | 0                                                                                 | 0                                                                                  | 2059                                                                                | 0                                                                                   | 0                                                                                   | 1984                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.752                                                                             |                                                                                   |                                                                                   | 0.952                                                                             |                                                                                   |                                                                                    | 0.890                                                                               |                                                                                     |                                                                                     | 0.790                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 2568                                                                              | 0                                                                                 | 0                                                                                 | 3202                                                                              | 0                                                                                 | 0                                                                                  | 1853                                                                                | 0                                                                                   | 0                                                                                   | 1608                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 3                                                                                 |                                                                                   |                                                                                   | 29                                                                                |                                                                                   |                                                                                    | 6                                                                                   |                                                                                     |                                                                                     | 20                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 407                                                                               |                                                                                   |                                                                                   | 996                                                                               |                                                                                   |                                                                                    | 466                                                                                 |                                                                                     |                                                                                     | 300                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                   | 22.6                                                                              |                                                                                   |                                                                                    | 12.7                                                                                |                                                                                     |                                                                                     | 8.2                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.88                                                                               | 0.88                                                                                | 0.88                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Adj. Flow (vph)         | 87                                                                                | 950                                                                               | 16                                                                                | 4                                                                                 | 906                                                                               | 118                                                                               | 23                                                                                 | 73                                                                                  | 11                                                                                  | 135                                                                                 | 56                                                                                  | 70                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 1053                                                                              | 0                                                                                 | 0                                                                                 | 1028                                                                              | 0                                                                                 | 0                                                                                  | 107                                                                                 | 0                                                                                   | 0                                                                                   | 261                                                                                 | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                  |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 6                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                  | 4                                                                                   |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 15.0                                                                              | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 9.0                                                                                | 9.0                                                                                 |                                                                                     | 9.0                                                                                 | 9.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 20.6                                                                              | 20.6                                                                              |                                                                                   | 20.6                                                                              | 20.6                                                                              |                                                                                   | 14.4                                                                               | 14.4                                                                                |                                                                                     | 14.4                                                                                | 14.4                                                                                |                                                                                     |
| Total Split (s)         | 61.0                                                                              | 61.0                                                                              |                                                                                   | 61.0                                                                              | 61.0                                                                              |                                                                                   | 29.0                                                                               | 29.0                                                                                |                                                                                     | 29.0                                                                                | 29.0                                                                                |                                                                                     |
| Total Split (%)         | 67.8%                                                                             | 67.8%                                                                             |                                                                                   | 67.8%                                                                             | 67.8%                                                                             |                                                                                   | 32.2%                                                                              | 32.2%                                                                               |                                                                                     | 32.2%                                                                               | 32.2%                                                                               |                                                                                     |
| Yellow Time (s)         | 4.1                                                                               | 4.1                                                                               |                                                                                   | 4.1                                                                               | 4.1                                                                               |                                                                                   | 3.1                                                                                | 3.1                                                                                 |                                                                                     | 3.1                                                                                 | 3.1                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.5                                                                               | 1.5                                                                               |                                                                                   | 1.5                                                                               | 1.5                                                                               |                                                                                   | 2.3                                                                                | 2.3                                                                                 |                                                                                     | 2.3                                                                                 | 2.3                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                    | 5.4                                                                                 |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | C-Max                                                                             | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                               | None                                                                                |                                                                                     | None                                                                                | None                                                                                |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 61.4                                                                              |                                                                                   |                                                                                   | 61.4                                                                              |                                                                                   |                                                                                    | 17.6                                                                                |                                                                                     |                                                                                     | 17.6                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.68                                                                              |                                                                                   |                                                                                   | 0.68                                                                              |                                                                                   |                                                                                    | 0.20                                                                                |                                                                                     |                                                                                     | 0.20                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.60                                                                              |                                                                                   |                                                                                   | 0.47                                                                              |                                                                                   |                                                                                    | 0.29                                                                                |                                                                                     |                                                                                     | 0.79                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 3.5                                                                               |                                                                                   |                                                                                   | 7.7                                                                               |                                                                                   |                                                                                    | 29.5                                                                                |                                                                                     |                                                                                     | 48.2                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 3.5                                                                               |                                                                                   |                                                                                   | 7.7                                                                               |                                                                                   |                                                                                    | 29.5                                                                                |                                                                                     |                                                                                     | 48.2                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 3.5                                                                               |                                                                                   |                                                                                   | 7.7                                                                               |                                                                                   |                                                                                    | 29.5                                                                                |                                                                                     |                                                                                     | 48.2                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 89                                                                                |                                                                                   |                                                                                   | 68                                                                                |                                                                                   |                                                                                    | 49                                                                                  |                                                                                     |                                                                                     | 131                                                                                 |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 133                                                                               |                                                                                   |                                                                                   | 224                                                                               |                                                                                   |                                                                                    | 85                                                                                  |                                                                                     |                                                                                     | 201                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 327                                                                               |                                                                                   |                                                                                   | 916                                                                               |                                                                                   |                                                                                    | 386                                                                                 |                                                                                     |                                                                                     | 220                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# 108: Burroughs Road & Route 58 (Black Rock Turnpike) 2040 Background Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Base Capacity (vph)    |                                                                                   | 1751                                                                              |                                                                                   |                                                                                   | 2192                                                                              |                                                                                   |                                                                                    | 490                                                                                 |                                                                                     |                                                                                     | 436                                                                                 |                                                                                     |
| Starvation Cap Reductn |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   | 0.60                                                                              |                                                                                   |                                                                                   | 0.47                                                                              |                                                                                   |                                                                                    | 0.22                                                                                |                                                                                     |                                                                                     | 0.60                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 11.1

Intersection LOS: B

Intersection Capacity Utilization 88.6%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)

|                                                                                          |                                                                                        |
|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
|  Ø2 (R) |  Ø4 |
| 61 s                                                                                     | 29 s                                                                                   |
|  Ø6 (R) |  Ø8 |
| 61 s                                                                                     | 29 s                                                                                   |

# 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         | →     | ↖     | ↗    | ↘     | ↙     | ↘     | ↙    | ↗     | ↘     | ↙    | ↗    | ↘     |
|-------------------------|-------|-------|------|-------|-------|-------|------|-------|-------|------|------|-------|
| Lane Group              | EBT   | EBR   | EBR2 | WBL2  | WBL   | WBT   | WBR  | NWL2  | NWL   | NWR  | NWR2 | NEL   |
| Lane Configurations     | ↖     | ↗     |      |       |       | ↖↗    |      |       | ↖↗    |      |      |       |
| Traffic Volume (vph)    | 433   | 553   | 5    | 67    | 3     | 471   | 1    | 4     | 468   | 10   | 35   | 5     |
| Future Volume (vph)     | 433   | 553   | 5    | 67    | 3     | 471   | 1    | 4     | 468   | 10   | 35   | 5     |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900 | 1900  | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900 | 1900  |
| Lane Width (ft)         | 12    | 12    | 12   | 12    | 11    | 11    | 12   | 12    | 10    | 12   | 12   | 12    |
| Lane Util. Factor       | 1.00  | 1.00  | 1.00 | 0.95  | 0.95  | 0.95  | 0.95 | 0.95  | 0.97  | 0.95 | 0.95 | 1.00  |
| Frt                     |       | 0.850 |      |       |       |       |      |       | 0.987 |      |      |       |
| Flt Protected           |       |       |      |       |       | 0.994 |      |       | 0.956 |      |      |       |
| Satd. Flow (prot)       | 1863  | 1583  | 0    | 0     | 0     | 3401  | 0    | 0     | 3182  | 0    | 0    | 0     |
| Flt Permitted           |       |       |      |       |       | 0.799 |      |       | 0.949 |      |      |       |
| Satd. Flow (perm)       | 1863  | 1583  | 0    | 0     | 0     | 2734  | 0    | 0     | 3159  | 0    | 0    | 0     |
| Right Turn on Red       |       |       | Yes  |       |       |       | Yes  |       |       |      | Yes  |       |
| Satd. Flow (RTOR)       |       | 56    |      |       |       |       |      |       | 150   |      |      |       |
| Link Speed (mph)        | 30    |       |      |       |       | 30    |      |       | 30    |      |      |       |
| Link Distance (ft)      | 996   |       |      |       |       | 549   |      |       | 218   |      |      |       |
| Travel Time (s)         | 22.6  |       |      |       |       | 12.5  |      |       | 5.0   |      |      |       |
| Peak Hour Factor        | 0.94  | 0.94  | 0.94 | 0.92  | 0.92  | 0.92  | 0.92 | 0.96  | 0.96  | 0.96 | 0.96 | 0.80  |
| Adj. Flow (vph)         | 461   | 588   | 5    | 73    | 3     | 512   | 1    | 4     | 488   | 10   | 36   | 6     |
| Shared Lane Traffic (%) |       |       |      |       |       |       |      |       |       |      |      |       |
| Lane Group Flow (vph)   | 461   | 593   | 0    | 0     | 0     | 589   | 0    | 0     | 538   | 0    | 0    | 0     |
| Turn Type               | NA    | pm+ov |      | Perm  | Perm  | NA    |      | D.Pm  | Prot  |      |      | Perm  |
| Protected Phases        | 2     | 4     |      |       |       | 2     |      |       | 4     |      |      |       |
| Permitted Phases        |       | 2     |      | 2     | 2     |       |      | 4     |       |      |      | 5     |
| Detector Phase          | 2     | 4     |      | 2     | 2     | 2     |      | 4     | 4     |      |      | 5     |
| Switch Phase            |       |       |      |       |       |       |      |       |       |      |      |       |
| Minimum Initial (s)     | 15.0  | 9.0   |      | 15.0  | 15.0  | 15.0  |      | 9.0   | 9.0   |      |      | 5.0   |
| Minimum Split (s)       | 22.8  | 15.4  |      | 22.8  | 22.8  | 22.8  |      | 15.4  | 15.4  |      |      | 12.6  |
| Total Split (s)         | 47.0  | 29.0  |      | 47.0  | 47.0  | 47.0  |      | 29.0  | 29.0  |      |      | 14.0  |
| Total Split (%)         | 52.2% | 32.2% |      | 52.2% | 52.2% | 52.2% |      | 32.2% | 32.2% |      |      | 15.6% |
| Yellow Time (s)         | 4.1   | 3.3   |      | 4.1   | 4.1   | 4.1   |      | 3.3   | 3.3   |      |      | 3.3   |
| All-Red Time (s)        | 3.7   | 3.1   |      | 3.7   | 3.7   | 3.7   |      | 3.1   | 3.1   |      |      | 4.3   |
| Lost Time Adjust (s)    | 0.0   | 0.0   |      |       |       | 0.0   |      |       | 0.0   |      |      |       |
| Total Lost Time (s)     | 7.8   | 6.4   |      |       |       | 7.8   |      |       | 6.4   |      |      |       |
| Lead/Lag                |       |       |      |       |       |       |      |       |       |      |      |       |
| Lead-Lag Optimize?      |       |       |      |       |       |       |      |       |       |      |      |       |
| Recall Mode             | C-Min | None  |      | C-Min | C-Min | C-Min |      | None  | None  |      |      | None  |
| Act Effct Green (s)     | 51.4  | 77.7  |      |       |       | 51.4  |      |       | 16.0  |      |      |       |
| Actuated g/C Ratio      | 0.57  | 0.86  |      |       |       | 0.57  |      |       | 0.18  |      |      |       |
| v/c Ratio               | 0.43  | 0.43  |      |       |       | 0.38  |      |       | 0.79  |      |      |       |
| Control Delay           | 9.6   | 4.4   |      |       |       | 13.9  |      |       | 33.6  |      |      |       |
| Queue Delay             | 0.0   | 0.0   |      |       |       | 0.0   |      |       | 0.0   |      |      |       |
| Total Delay             | 9.6   | 4.4   |      |       |       | 13.9  |      |       | 33.6  |      |      |       |
| LOS                     | A     | A     |      |       |       | B     |      |       | C     |      |      |       |
| Approach Delay          | 6.7   |       |      |       |       | 13.9  |      |       | 33.6  |      |      |       |
| Approach LOS            | A     |       |      |       |       | B     |      |       | C     |      |      |       |
| Queue Length 50th (ft)  | 95    | 17    |      |       |       | 104   |      |       | 108   |      |      |       |
| Queue Length 95th (ft)  | 266   | 318   |      |       |       | 171   |      |       | 154   |      |      |       |
| Internal Link Dist (ft) | 916   |       |      |       |       | 469   |      |       | 138   |      |      |       |
| Turn Bay Length (ft)    |       |       |      |       |       |       |      |       |       |      |      |       |

# 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | NET                                                                               | NER                                                                               | NER2                                                                              | SWL2                                                                              | SWL                                                                               | SWT                                                                               | SWR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |                                                                                   |
| Traffic Volume (vph)    | 3                                                                                 | 1                                                                                 | 5                                                                                 | 3                                                                                 | 8                                                                                 | 1                                                                                 | 6                                                                                 |
| Future Volume (vph)     | 3                                                                                 | 1                                                                                 | 5                                                                                 | 3                                                                                 | 8                                                                                 | 1                                                                                 | 6                                                                                 |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 15                                                                                | 12                                                                                | 12                                                                                |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.944                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.953                                                                             |                                                                                   |
| Flt Protected           | 0.983                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.970                                                                             |                                                                                   |
| Satd. Flow (prot)       | 1729                                                                              | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1722                                                                              | 0                                                                                 |
| Flt Permitted           | 0.874                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.825                                                                             |                                                                                   |
| Satd. Flow (perm)       | 1537                                                                              | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1465                                                                              | 0                                                                                 |
| Right Turn on Red       |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   |                                                                                   | No                                                                                |
| Satd. Flow (RTOR)       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |
| Link Distance (ft)      | 653                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 695                                                                               |                                                                                   |
| Travel Time (s)         | 17.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 19.0                                                                              |                                                                                   |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              |
| Adj. Flow (vph)         | 4                                                                                 | 1                                                                                 | 6                                                                                 | 4                                                                                 | 10                                                                                | 1                                                                                 | 8                                                                                 |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 17                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 23                                                                                | 0                                                                                 |
| Turn Type               | NA                                                                                |                                                                                   |                                                                                   | Perm                                                                              | Perm                                                                              | NA                                                                                |                                                                                   |
| Protected Phases        | 5                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 5                                                                                 |                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   | 5                                                                                 | 5                                                                                 |                                                                                   |                                                                                   |
| Detector Phase          | 5                                                                                 |                                                                                   |                                                                                   | 5                                                                                 | 5                                                                                 | 5                                                                                 |                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)     | 5.0                                                                               |                                                                                   |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                   |
| Minimum Split (s)       | 12.6                                                                              |                                                                                   |                                                                                   | 12.6                                                                              | 12.6                                                                              | 12.6                                                                              |                                                                                   |
| Total Split (s)         | 14.0                                                                              |                                                                                   |                                                                                   | 14.0                                                                              | 14.0                                                                              | 14.0                                                                              |                                                                                   |
| Total Split (%)         | 15.6%                                                                             |                                                                                   |                                                                                   | 15.6%                                                                             | 15.6%                                                                             | 15.6%                                                                             |                                                                                   |
| Yellow Time (s)         | 3.3                                                                               |                                                                                   |                                                                                   | 3.3                                                                               | 3.3                                                                               | 3.3                                                                               |                                                                                   |
| All-Red Time (s)        | 4.3                                                                               |                                                                                   |                                                                                   | 4.3                                                                               | 4.3                                                                               | 4.3                                                                               |                                                                                   |
| Lost Time Adjust (s)    | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |
| Total Lost Time (s)     | 7.6                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Recall Mode             | None                                                                              |                                                                                   |                                                                                   | None                                                                              | None                                                                              | None                                                                              |                                                                                   |
| Act Effct Green (s)     | 5.9                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 5.9                                                                               |                                                                                   |
| Actuated g/C Ratio      | 0.07                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.07                                                                              |                                                                                   |
| v/c Ratio               | 0.17                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.24                                                                              |                                                                                   |
| Control Delay           | 42.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 45.5                                                                              |                                                                                   |
| Queue Delay             | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |
| Total Delay             | 42.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 45.5                                                                              |                                                                                   |
| LOS                     | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |
| Approach Delay          | 42.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 45.5                                                                              |                                                                                   |
| Approach LOS            | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |
| Queue Length 50th (ft)  | 9                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 13                                                                                |                                                                                   |
| Queue Length 95th (ft)  | 26                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 32                                                                                |                                                                                   |
| Internal Link Dist (ft) | 573                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 615                                                                               |                                                                                   |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

# 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)

Timing Plan: Saturday MIDDAY

|                        | →    | ↗    | ↘    | ↖    | ↗   | ↘    | ↖   | ↗    | ↘    | ↖   | ↗    | ↘   |
|------------------------|------|------|------|------|-----|------|-----|------|------|-----|------|-----|
| Lane Group             | EBT  | EBR  | EBR2 | WBL2 | WBL | WBT  | WBR | NWL2 | NWL  | NWR | NWR2 | NEL |
| Base Capacity (vph)    | 1063 | 1413 |      |      |     | 1560 |     |      | 905  |     |      |     |
| Starvation Cap Reductn | 0    | 0    |      |      |     | 0    |     |      | 0    |     |      |     |
| Spillback Cap Reductn  | 0    | 0    |      |      |     | 0    |     |      | 0    |     |      |     |
| Storage Cap Reductn    | 0    | 0    |      |      |     | 0    |     |      | 0    |     |      |     |
| Reduced v/c Ratio      | 0.43 | 0.42 |      |      |     | 0.38 |     |      | 0.59 |     |      |     |

## Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 32 (36%), Referenced to phase 2:EBWB, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 15.8

Intersection LOS: B

Intersection Capacity Utilization 81.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)/Route 58 (Tunxis Hill Cut

|                                                                                          |                                                                                      |                                                                                        |
|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
|  02 (R) |  04 |  05 |
| 47 s                                                                                     | 29 s                                                                                 | 14 s                                                                                   |



109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)  
 Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                        |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Lane Group             | NET                                                                               | NER                                                                               | NER2                                                                              | SWL2                                                                              | SWL                                                                               | SWT                                                                               | SWR                                                                                |
| Base Capacity (vph)    | 114                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 108                                                                               |                                                                                    |
| Starvation Cap Reductn | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                    |
| Spillback Cap Reductn  | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                    |
| Storage Cap Reductn    | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 |                                                                                    |
| Reduced v/c Ratio      | 0.15                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.21                                                                              |                                                                                    |
| Intersection Summary   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |

201: Tunxis Hill Road & Route 58 (Tunxis Hill Cutoff) 2040 Background Optimized Conditions  
 Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         | →     | ↘    | ↙    | ←     | ↖     | ↗     |
|-------------------------|-------|------|------|-------|-------|-------|
| Lane Group              | EBT   | EBR  | WBL  | WBT   | NBL   | NBR   |
| Lane Configurations     | ↑↑    |      |      | ↑     | ↑     | ↑     |
| Traffic Volume (vph)    | 486   | 11   | 41   | 519   | 5     | 57    |
| Future Volume (vph)     | 486   | 11   | 41   | 519   | 5     | 57    |
| Ideal Flow (vphpl)      | 1900  | 1900 | 1900 | 1900  | 1900  | 1900  |
| Lane Width (ft)         | 11    | 12   | 12   | 11    | 10    | 10    |
| Storage Length (ft)     |       | 0    | 0    |       | 0     | 50    |
| Storage Lanes           |       | 0    | 0    |       | 1     | 1     |
| Taper Length (ft)       |       |      | 25   |       | 25    |       |
| Lane Util. Factor       | 0.95  | 0.95 | 1.00 | 1.00  | 1.00  | 1.00  |
| Frt                     | 0.997 |      |      |       |       | 0.850 |
| Flt Protected           |       |      |      | 0.996 | 0.950 |       |
| Satd. Flow (prot)       | 3411  | 0    | 0    | 1793  | 1652  | 1478  |
| Flt Permitted           |       |      |      | 0.996 | 0.950 |       |
| Satd. Flow (perm)       | 3411  | 0    | 0    | 1793  | 1652  | 1478  |
| Link Speed (mph)        | 30    |      |      | 30    | 25    |       |
| Link Distance (ft)      | 1095  |      |      | 214   | 782   |       |
| Travel Time (s)         | 24.9  |      |      | 4.9   | 21.3  |       |
| Peak Hour Factor        | 0.88  | 0.88 | 0.90 | 0.90  | 0.80  | 0.80  |
| Adj. Flow (vph)         | 552   | 13   | 46   | 577   | 6     | 71    |
| Shared Lane Traffic (%) |       |      |      |       |       |       |
| Lane Group Flow (vph)   | 565   | 0    | 0    | 623   | 6     | 71    |
| Sign Control            | Free  |      |      | Free  | Stop  |       |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 56.7% ICU Level of Service B

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↑↑   |      |      | ↑    | ↑    | ↑    |
| Traffic Vol, veh/h       | 486  | 11   | 41   | 519  | 5    | 57   |
| Future Vol, veh/h        | 486  | 11   | 41   | 519  | 5    | 57   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | 0    | 50   |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 88   | 88   | 90   | 90   | 80   | 80   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 552  | 13   | 46   | 577  | 6    | 71   |

| Major/Minor          | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0      | 0      | 565    |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Critical Hdwy        | -      | -      | 4.13   |
| Critical Hdwy Stg 1  | -      | -      | -      |
| Critical Hdwy Stg 2  | -      | -      | -      |
| Follow-up Hdwy       | -      | -      | 2.219  |
| Pot Cap-1 Maneuver   | -      | -      | 1005   |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | -      | -      | 1005   |
| Mov Cap-2 Maneuver   | -      | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |

| Approach             | EB | WB  | NB   |
|----------------------|----|-----|------|
| HCM Control Delay, s | 0  | 0.6 | 11.9 |
| HCM LOS              |    |     | B    |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | 171   | 716   | -   | -   | 1005  | -   |
| HCM Lane V/C Ratio    | 0.037 | 0.1   | -   | -   | 0.045 | -   |
| HCM Control Delay (s) | 26.9  | 10.6  | -   | -   | 8.8   | 0   |
| HCM Lane LOS          | D     | B     | -   | -   | A     | A   |
| HCM 95th %tile Q(veh) | 0.1   | 0.3   | -   | -   | 0.1   | -   |

# 202: Route 732 (Black Rock Turnpike) & Judd Street 2040 Background Optimized Conditions Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (vph)    | 22                                                                                | 74                                                                                | 49                                                                                | 495                                                                               | 599                                                                               | 34                                                                                |
| Future Volume (vph)     | 22                                                                                | 74                                                                                | 49                                                                                | 495                                                                               | 599                                                                               | 34                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Storage Length (ft)     | 0                                                                                 | 0                                                                                 | 25                                                                                |                                                                                   |                                                                                   | 0                                                                                 |
| Storage Lanes           | 1                                                                                 | 0                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 25                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.896                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.993                                                                             |                                                                                   |
| Flt Protected           | 0.989                                                                             |                                                                                   |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1871                                                                              | 0                                                                                 | 0                                                                                 | 3525                                                                              | 1850                                                                              | 0                                                                                 |
| Flt Permitted           | 0.989                                                                             |                                                                                   |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1871                                                                              | 0                                                                                 | 0                                                                                 | 3525                                                                              | 1850                                                                              | 0                                                                                 |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 586                                                                               |                                                                                   |                                                                                   | 395                                                                               | 218                                                                               |                                                                                   |
| Travel Time (s)         | 16.0                                                                              |                                                                                   |                                                                                   | 9.0                                                                               | 5.0                                                                               |                                                                                   |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.98                                                                              | 0.98                                                                              | 0.93                                                                              | 0.93                                                                              |
| Adj. Flow (vph)         | 28                                                                                | 93                                                                                | 50                                                                                | 505                                                                               | 644                                                                               | 37                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 121                                                                               | 0                                                                                 | 0                                                                                 | 555                                                                               | 681                                                                               | 0                                                                                 |
| Sign Control            | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |

## Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 64.1% ICU Level of Service C

Analysis Period (min) 15

202: Route 732 (Black Rock Turnpike) & Judd Street 2040 Background Optimized Conditions  
 HCM 2010 TWSC

Timing Plan: Saturday MIDDAY

Intersection

Int Delay, s/veh 2.1

| Movement                 | EBL                                                                               | EBR  | NBL  | NBT                                                                               | SBT                                                                               | SBR  |
|--------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |  |      |      |  |  |      |
| Traffic Vol, veh/h       | 22                                                                                | 74   | 49   | 495                                                                               | 599                                                                               | 34   |
| Future Vol, veh/h        | 22                                                                                | 74   | 49   | 495                                                                               | 599                                                                               | 34   |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0    | 0                                                                                 | 0                                                                                 | 0    |
| Sign Control             | Stop                                                                              | Stop | Free | Free                                                                              | Free                                                                              | Free |
| RT Channelized           | -                                                                                 | None | -    | None                                                                              | -                                                                                 | None |
| Storage Length           | 0                                                                                 | -    | 25   | -                                                                                 | -                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -    | -    | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 80                                                                                | 80   | 98   | 98                                                                                | 93                                                                                | 93   |
| Heavy Vehicles, %        | 2                                                                                 | 2    | 2    | 2                                                                                 | 2                                                                                 | 2    |
| Mvmt Flow                | 28                                                                                | 93   | 50   | 505                                                                               | 644                                                                               | 37   |

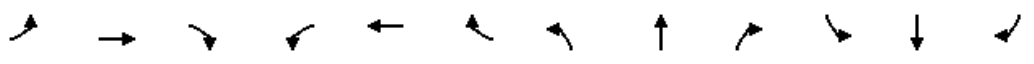
| Major/Minor          | Minor2 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 1015   | 662    | 681    |
| Stage 1              | 662    | -      | -      |
| Stage 2              | 353    | -      | -      |
| Critical Hdwy        | 6.63   | 6.23   | 4.13   |
| Critical Hdwy Stg 1  | 5.43   | -      | -      |
| Critical Hdwy Stg 2  | 5.83   | -      | -      |
| Follow-up Hdwy       | 3.519  | 3.319  | 2.219  |
| Pot Cap-1 Maneuver   | 249    | 461    | 910    |
| Stage 1              | 512    | -      | -      |
| Stage 2              | 683    | -      | -      |
| Platoon blocked, %   |        |        |        |
| Mov Cap-1 Maneuver   | 230    | 461    | 910    |
| Mov Cap-2 Maneuver   | 230    | -      | -      |
| Stage 1              | 512    | -      | -      |
| Stage 2              | 631    | -      | -      |

| Approach             | EB   | NB  | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 19.1 | 1.1 | 0  |
| HCM LOS              | C    |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 910   | -   | 375   | -   | -   |
| HCM Lane V/C Ratio    | 0.055 | -   | 0.32  | -   | -   |
| HCM Control Delay (s) | 9.2   | 0.3 | 19.1  | -   | -   |
| HCM Lane LOS          | A     | A   | C     | -   | -   |
| HCM 95th %tile Q(veh) | 0.2   | -   | 1.4   | -   | -   |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Talbot Drive Concept A Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |       |      |       |       |      |       |       |      |       |       |      |
|-------------------------|------------------------------------------------------------------------------------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|
| Lane Group              | EBL                                                                                | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
| Lane Configurations     |                                                                                    | ↔     |      |       | ↔     |      |       | ↔     |      |       | ↔     |      |
| Traffic Volume (vph)    | 11                                                                                 | 1     | 3    | 204   | 0     | 167  | 2     | 680   | 26   | 65    | 643   | 4    |
| Future Volume (vph)     | 11                                                                                 | 1     | 3    | 204   | 0     | 167  | 2     | 680   | 26   | 65    | 643   | 4    |
| Ideal Flow (vphpl)      | 1900                                                                               | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12                                                                                 | 16    | 12   | 12    | 16    | 12   | 12    | 13    | 12   | 12    | 13    | 12   |
| Lane Util. Factor       | 1.00                                                                               | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 |
| Frt                     |                                                                                    | 0.972 |      |       | 0.939 |      |       | 0.995 |      |       | 0.999 |      |
| Flt Protected           |                                                                                    | 0.964 |      |       | 0.973 |      |       |       |      |       | 0.995 |      |
| Satd. Flow (prot)       | 0                                                                                  | 1959  | 0    | 0     | 1910  | 0    | 0     | 1897  | 0    | 0     | 1895  | 0    |
| Flt Permitted           |                                                                                    | 0.771 |      |       | 0.818 |      |       | 0.999 |      |       | 0.877 |      |
| Satd. Flow (perm)       | 0                                                                                  | 1567  | 0    | 0     | 1606  | 0    | 0     | 1895  | 0    | 0     | 1670  | 0    |
| Right Turn on Red       |                                                                                    |       | Yes  |       |       | Yes  |       |       | Yes  |       |       | Yes  |
| Satd. Flow (RTOR)       |                                                                                    | 4     |      |       | 39    |      |       | 3     |      |       |       |      |
| Link Speed (mph)        |                                                                                    | 25    |      |       | 30    |      |       | 35    |      |       | 35    |      |
| Link Distance (ft)      |                                                                                    | 378   |      |       | 442   |      |       | 1898  |      |       | 522   |      |
| Travel Time (s)         |                                                                                    | 10.3  |      |       | 10.0  |      |       | 37.0  |      |       | 10.2  |      |
| Peak Hour Factor        | 0.80                                                                               | 0.80  | 0.80 | 0.84  | 0.84  | 0.84 | 0.94  | 0.94  | 0.94 | 0.91  | 0.91  | 0.91 |
| Heavy Vehicles (%)      | 3%                                                                                 | 3%    | 3%   | 3%    | 3%    | 3%   | 3%    | 3%    | 3%   | 3%    | 3%    | 3%   |
| Adj. Flow (vph)         | 14                                                                                 | 1     | 4    | 243   | 0     | 199  | 2     | 723   | 28   | 71    | 707   | 4    |
| Shared Lane Traffic (%) |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 0                                                                                  | 19    | 0    | 0     | 442   | 0    | 0     | 753   | 0    | 0     | 782   | 0    |
| Turn Type               | Perm                                                                               | NA    |      | Perm  | NA    |      | Perm  | NA    |      | Perm  | NA    |      |
| Protected Phases        |                                                                                    | 4     |      |       | 8     |      |       | 2     |      |       | 6     |      |
| Permitted Phases        | 4                                                                                  |       |      | 8     |       |      | 2     |       |      | 6     |       |      |
| Detector Phase          | 4                                                                                  | 4     |      | 8     | 8     |      | 2     | 2     |      | 6     | 6     |      |
| Switch Phase            |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Minimum Initial (s)     | 7.0                                                                                | 7.0   |      | 7.0   | 7.0   |      | 15.0  | 15.0  |      | 15.0  | 15.0  |      |
| Minimum Split (s)       | 11.7                                                                               | 11.7  |      | 11.7  | 11.7  |      | 20.6  | 20.6  |      | 20.6  | 20.6  |      |
| Total Split (s)         | 50.0                                                                               | 50.0  |      | 50.0  | 50.0  |      | 70.0  | 70.0  |      | 70.0  | 70.0  |      |
| Total Split (%)         | 41.7%                                                                              | 41.7% |      | 41.7% | 41.7% |      | 58.3% | 58.3% |      | 58.3% | 58.3% |      |
| Yellow Time (s)         | 3.3                                                                                | 3.3   |      | 3.3   | 3.3   |      | 4.0   | 4.0   |      | 4.0   | 4.0   |      |
| All-Red Time (s)        | 1.4                                                                                | 1.4   |      | 1.4   | 1.4   |      | 1.6   | 1.6   |      | 1.6   | 1.6   |      |
| Lost Time Adjust (s)    |                                                                                    | 0.0   |      |       | 0.0   |      |       | 0.0   |      |       | 0.0   |      |
| Total Lost Time (s)     |                                                                                    | 4.7   |      |       | 4.7   |      |       | 5.6   |      |       | 5.6   |      |
| Lead/Lag                |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Lead-Lag Optimize?      |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Recall Mode             | None                                                                               | None  |      | None  | None  |      | C-Min | C-Min |      | C-Min | C-Min |      |
| Act Effect Green (s)    |                                                                                    | 35.6  |      |       | 35.6  |      |       | 74.1  |      |       | 74.1  |      |
| Actuated g/C Ratio      |                                                                                    | 0.30  |      |       | 0.30  |      |       | 0.62  |      |       | 0.62  |      |
| v/c Ratio               |                                                                                    | 0.04  |      |       | 0.88  |      |       | 0.64  |      |       | 0.76  |      |
| Control Delay           |                                                                                    | 22.2  |      |       | 54.6  |      |       | 15.4  |      |       | 24.6  |      |
| Queue Delay             |                                                                                    | 0.0   |      |       | 0.0   |      |       | 0.0   |      |       | 0.0   |      |
| Total Delay             |                                                                                    | 22.2  |      |       | 54.6  |      |       | 15.4  |      |       | 24.6  |      |
| LOS                     |                                                                                    | C     |      |       | D     |      |       | B     |      |       | C     |      |
| Approach Delay          |                                                                                    | 22.2  |      |       | 54.6  |      |       | 15.4  |      |       | 24.6  |      |
| Approach LOS            |                                                                                    | C     |      |       | D     |      |       | B     |      |       | C     |      |
| Queue Length 50th (ft)  |                                                                                    | 8     |      |       | 299   |      |       | 419   |      |       | 414   |      |
| Queue Length 95th (ft)  |                                                                                    | 21    |      |       | 347   |      |       | 389   |      |       | #778  |      |
| Internal Link Dist (ft) |                                                                                    | 298   |      |       | 362   |      |       | 1818  |      |       | 442   |      |



# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

2040 Diverged Concept A

Timing Plan: Weekday AM Peak

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Turn Bay Length (ft)   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)    |                                                                                   | 594                                                                               |                                                                                   |                                                                                   | 630                                                                               |                                                                                   |                                                                                    | 1170                                                                                |                                                                                     |                                                                                     | 1030                                                                                |                                                                                     |
| Starvation Cap Reductn |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   | 0.03                                                                              |                                                                                   |                                                                                   | 0.70                                                                              |                                                                                   |                                                                                    | 0.64                                                                                |                                                                                     |                                                                                     | 0.76                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 91 (76%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 27.7

Intersection LOS: C

Intersection Capacity Utilization 110.9%

ICU Level of Service H

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

|                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                      |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|   |   |   |   |   |
| Ø2 (R)                                                                              |                                                                                     |                                                                                     | Ø4                                                                                  |                                                                                      |
| 70 s                                                                                |                                                                                     |                                                                                     | 50 s                                                                                |                                                                                      |
|  |  |  |  |  |
| Ø6 (R)                                                                              |                                                                                     |                                                                                     | Ø8                                                                                  |                                                                                      |
| 70 s                                                                                |                                                                                     |                                                                                     | 50 s                                                                                |                                                                                      |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive Lanes, Volumes, Timings

2040 Improved Concept A

Timing Plan: Weekday AM Peak

| Lane Group              | EBL   | EBR   | NBL   | NBT   | SBT   | SBR   | Ø3   |
|-------------------------|-------|-------|-------|-------|-------|-------|------|
| Lane Configurations     |       |       |       |       |       |       |      |
| Traffic Volume (vph)    | 54    | 136   | 366   | 739   | 622   | 198   |      |
| Future Volume (vph)     | 54    | 136   | 366   | 739   | 622   | 198   |      |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  |      |
| Lane Width (ft)         | 10    | 10    | 11    | 11    | 12    | 12    |      |
| Storage Length (ft)     | 0     | 50    | 100   |       |       | 50    |      |
| Storage Lanes           | 1     | 1     | 1     |       |       | 1     |      |
| Taper Length (ft)       | 25    |       | 50    |       |       |       |      |
| Lane Util. Factor       | 1.00  | 1.00  | 1.00  | 0.95  | 1.00  | 1.00  |      |
| Frt                     |       | 0.850 |       |       |       | 0.850 |      |
| Flt Protected           | 0.950 |       | 0.950 |       |       |       |      |
| Satd. Flow (prot)       | 1636  | 1463  | 1694  | 3388  | 1845  | 1568  |      |
| Flt Permitted           | 0.950 |       | 0.256 |       |       |       |      |
| Satd. Flow (perm)       | 1636  | 1463  | 456   | 3388  | 1845  | 1568  |      |
| Right Turn on Red       |       | Yes   |       |       |       | Yes   |      |
| Satd. Flow (RTOR)       |       | 164   |       |       |       | 49    |      |
| Link Speed (mph)        | 25    |       |       | 30    | 35    |       |      |
| Link Distance (ft)      | 445   |       |       | 510   | 341   |       |      |
| Travel Time (s)         | 12.1  |       |       | 11.6  | 6.6   |       |      |
| Peak Hour Factor        | 0.83  | 0.83  | 0.91  | 0.91  | 0.94  | 0.94  |      |
| Heavy Vehicles (%)      | 3%    | 3%    | 3%    | 3%    | 3%    | 3%    |      |
| Adj. Flow (vph)         | 65    | 164   | 402   | 812   | 662   | 211   |      |
| Shared Lane Traffic (%) |       |       |       |       |       |       |      |
| Lane Group Flow (vph)   | 65    | 164   | 402   | 812   | 662   | 211   |      |
| Turn Type               | Prot  | Perm  | pm+pt | NA    | NA    | Perm  |      |
| Protected Phases        | 4     |       | 1     | 6     | 2     |       | 3    |
| Permitted Phases        |       | 4     | 6     |       |       | 2     |      |
| Detector Phase          | 4     | 4     | 1     | 6     | 2     | 2     |      |
| Switch Phase            |       |       |       |       |       |       |      |
| Minimum Initial (s)     | 9.0   | 9.0   | 5.0   | 15.0  | 15.0  | 15.0  | 7.0  |
| Minimum Split (s)       | 13.0  | 13.0  | 9.2   | 21.9  | 21.9  | 21.9  | 22.0 |
| Total Split (s)         | 13.0  | 13.0  | 28.0  | 85.0  | 57.0  | 57.0  | 22.0 |
| Total Split (%)         | 10.8% | 10.8% | 23.3% | 70.8% | 47.5% | 47.5% | 18%  |
| Yellow Time (s)         | 3.0   | 3.0   | 3.2   | 4.9   | 4.9   | 4.9   | 4.0  |
| All-Red Time (s)        | 1.0   | 1.0   | 1.0   | 2.0   | 2.0   | 2.0   | 0.0  |
| Lost Time Adjust (s)    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |      |
| Total Lost Time (s)     | 4.0   | 4.0   | 4.2   | 6.9   | 6.9   | 6.9   |      |
| Lead/Lag                | Lag   | Lag   | Lead  |       | Lag   | Lag   | Lead |
| Lead-Lag Optimize?      | Yes   | Yes   | Yes   |       | Yes   | Yes   | Yes  |
| Recall Mode             | None  | None  | None  | C-Min | C-Min | C-Min | None |
| Act Effect Green (s)    | 10.3  | 10.3  | 101.5 | 98.8  | 68.0  | 68.0  |      |
| Actuated g/C Ratio      | 0.09  | 0.09  | 0.85  | 0.82  | 0.57  | 0.57  |      |
| v/c Ratio               | 0.46  | 0.60  | 0.61  | 0.29  | 0.63  | 0.23  |      |
| Control Delay           | 62.9  | 17.1  | 15.3  | 3.5   | 15.8  | 8.3   |      |
| Queue Delay             | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |      |
| Total Delay             | 62.9  | 17.1  | 15.3  | 3.5   | 15.8  | 8.3   |      |
| LOS                     | E     | B     | B     | A     | B     | A     |      |
| Approach Delay          | 30.1  |       |       | 7.4   | 13.9  |       |      |
| Approach LOS            | C     |       |       | A     | B     |       |      |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive Lanes, Volumes, Timings

2040 Improved Concept A  
Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |    |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3 |
| Queue Length 50th (ft)  | 49                                                                                | 0                                                                                 | 81                                                                                | 34                                                                                | 189                                                                               | 39                                                                                |    |
| Queue Length 95th (ft)  | 87                                                                                | 50                                                                                | 238                                                                               | 180                                                                               | 421                                                                               | m76                                                                               |    |
| Internal Link Dist (ft) | 365                                                                               |                                                                                   |                                                                                   | 430                                                                               | 261                                                                               |                                                                                   |    |
| Turn Bay Length (ft)    |                                                                                   | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   | 50                                                                                |    |
| Base Capacity (vph)     | 140                                                                               | 275                                                                               | 667                                                                               | 2790                                                                              | 1046                                                                              | 910                                                                               |    |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |    |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |    |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |    |
| Reduced v/c Ratio       | 0.46                                                                              | 0.60                                                                              | 0.60                                                                              | 0.29                                                                              | 0.63                                                                              | 0.23                                                                              |    |

## Intersection Summary

Area Type: Other  
Cycle Length: 120  
Actuated Cycle Length: 120  
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow, Master Intersection  
Natural Cycle: 100  
Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 0.63  
Intersection Signal Delay: 12.1  
Intersection Capacity Utilization 73.1%  
Analysis Period (min) 15  
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

|                                                                                            |                                                                                            |                                                                                          |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø3 |  Ø4 |
| 28 s                                                                                       | 57 s                                                                                       | 22 s                                                                                     | 13 s                                                                                     |
|  Ø6 (R) |                                                                                            |                                                                                          |                                                                                          |
| 85 s                                                                                       |                                                                                            |                                                                                          |                                                                                          |

# 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Drive 2040 Improved Concept A Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 61                                                                                | 1                                                                                 | 15                                                                                | 3                                                                                 | 0                                                                                 | 48                                                                                | 59                                                                                 | 1051                                                                                | 0                                                                                   | 1                                                                                   | 586                                                                                 | 181                                                                                 |
| Future Volume (vph)     | 61                                                                                | 1                                                                                 | 15                                                                                | 3                                                                                 | 0                                                                                 | 48                                                                                | 59                                                                                 | 1051                                                                                | 0                                                                                   | 1                                                                                   | 586                                                                                 | 181                                                                                 |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                 | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 50                                                                                |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 200                                                                                 |                                                                                     | 0                                                                                   |
| Storage Lanes           | 1                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 50                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 50                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                               | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Frt                     |                                                                                   | 0.939                                                                             |                                                                                   |                                                                                   | 0.873                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.965                                                                               |                                                                                     |
| Flt Protected           | 0.950                                                                             | 0.972                                                                             |                                                                                   |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                    | 0.997                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1887                                                                              | 1599                                                                              | 0                                                                                 | 0                                                                                 | 1820                                                                              | 0                                                                                 | 0                                                                                  | 3494                                                                                | 0                                                                                   | 0                                                                                   | 3382                                                                                | 0                                                                                   |
| Flt Permitted           | 0.950                                                                             | 0.972                                                                             |                                                                                   |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                    | 0.829                                                                               |                                                                                     |                                                                                     | 0.954                                                                               |                                                                                     |
| Satd. Flow (perm)       | 1887                                                                              | 1599                                                                              | 0                                                                                 | 0                                                                                 | 1820                                                                              | 0                                                                                 | 0                                                                                  | 2906                                                                                | 0                                                                                   | 0                                                                                   | 3227                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 19                                                                                |                                                                                   |                                                                                   | 112                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 71                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 347                                                                               |                                                                                   |                                                                                   | 133                                                                               |                                                                                   |                                                                                    | 293                                                                                 |                                                                                     |                                                                                     | 336                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.5                                                                               |                                                                                   |                                                                                   | 3.6                                                                               |                                                                                   |                                                                                    | 6.7                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.90                                                                               | 0.90                                                                                | 0.90                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                |
| Heavy Vehicles (%)      | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                 | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  |
| Adj. Flow (vph)         | 76                                                                                | 1                                                                                 | 19                                                                                | 4                                                                                 | 0                                                                                 | 60                                                                                | 66                                                                                 | 1168                                                                                | 0                                                                                   | 1                                                                                   | 666                                                                                 | 206                                                                                 |
| Shared Lane Traffic (%) | 35%                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 49                                                                                | 47                                                                                | 0                                                                                 | 0                                                                                 | 64                                                                                | 0                                                                                 | 0                                                                                  | 1234                                                                                | 0                                                                                   | 0                                                                                   | 873                                                                                 | 0                                                                                   |
| Turn Type               | Split                                                                             | NA                                                                                |                                                                                   | Split                                                                             | NA                                                                                |                                                                                   | pm+pt                                                                              | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        | 4                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 2                                                                                  |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 4                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                                | 15.0                                                                                |                                                                                     | 15.0                                                                                | 15.0                                                                                |                                                                                     |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              |                                                                                   | 9.0                                                                               | 9.0                                                                               |                                                                                   | 10.9                                                                               | 20.4                                                                                |                                                                                     | 20.4                                                                                | 20.4                                                                                |                                                                                     |
| Total Split (s)         | 14.0                                                                              | 14.0                                                                              |                                                                                   | 11.0                                                                              | 11.0                                                                              |                                                                                   | 10.9                                                                               | 95.0                                                                                |                                                                                     | 84.1                                                                                | 84.1                                                                                |                                                                                     |
| Total Split (%)         | 11.7%                                                                             | 11.7%                                                                             |                                                                                   | 9.2%                                                                              | 9.2%                                                                              |                                                                                   | 9.1%                                                                               | 79.2%                                                                               |                                                                                     | 70.1%                                                                               | 70.1%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 4.2                                                                                | 4.2                                                                                 |                                                                                     | 4.2                                                                                 | 4.2                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               |                                                                                   | 1.0                                                                               | 1.0                                                                               |                                                                                   | 1.7                                                                                | 1.2                                                                                 |                                                                                     | 1.2                                                                                 | 1.2                                                                                 |                                                                                     |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                    | 5.4                                                                                 |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Lag                                                                                |                                                                                     |                                                                                     | Lead                                                                                | Lead                                                                                |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Yes                                                                                |                                                                                     |                                                                                     | Yes                                                                                 | Yes                                                                                 |                                                                                     |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              |                                                                                   | None                                                                               | C-Min                                                                               |                                                                                     | C-Min                                                                               | C-Min                                                                               |                                                                                     |
| Act Effect Green (s)    | 9.3                                                                               | 9.3                                                                               |                                                                                   |                                                                                   | 5.7                                                                               |                                                                                   |                                                                                    | 97.2                                                                                |                                                                                     |                                                                                     | 97.2                                                                                |                                                                                     |
| Actuated g/C Ratio      | 0.08                                                                              | 0.08                                                                              |                                                                                   |                                                                                   | 0.05                                                                              |                                                                                   |                                                                                    | 0.81                                                                                |                                                                                     |                                                                                     | 0.81                                                                                |                                                                                     |
| v/c Ratio               | 0.34                                                                              | 0.33                                                                              |                                                                                   |                                                                                   | 0.33                                                                              |                                                                                   |                                                                                    | 0.52                                                                                |                                                                                     |                                                                                     | 0.33                                                                                |                                                                                     |
| Control Delay           | 58.8                                                                              | 41.8                                                                              |                                                                                   |                                                                                   | 5.9                                                                               |                                                                                   |                                                                                    | 2.4                                                                                 |                                                                                     |                                                                                     | 1.5                                                                                 |                                                                                     |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.1                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             | 58.8                                                                              | 41.8                                                                              |                                                                                   |                                                                                   | 5.9                                                                               |                                                                                   |                                                                                    | 2.5                                                                                 |                                                                                     |                                                                                     | 1.5                                                                                 |                                                                                     |
| LOS                     | E                                                                                 | D                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 50.5                                                                              |                                                                                   |                                                                                   | 5.9                                                                               |                                                                                   |                                                                                    | 2.5                                                                                 |                                                                                     |                                                                                     | 1.5                                                                                 |                                                                                     |
| Approach LOS            |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |

# 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Driveway Lanes, Volumes, Timings

2040 Improved Concept A  
Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  | 38                                                                                | 22                                                                                |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 60                                                                                  |                                                                                     |                                                                                     | 11                                                                                  |                                                                                     |
| Queue Length 95th (ft)  | 71                                                                                | 53                                                                                |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 53                                                                                  |                                                                                     |                                                                                     | 40                                                                                  |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 267                                                                               |                                                                                   |                                                                                   | 53                                                                                |                                                                                   |                                                                                    | 213                                                                                 |                                                                                     |                                                                                     | 256                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 159                                                                               | 152                                                                               |                                                                                   |                                                                                   | 211                                                                               |                                                                                   |                                                                                    | 2353                                                                                |                                                                                     |                                                                                     | 2626                                                                                |                                                                                     |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 197                                                                                 |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 11                                                                                  |                                                                                     |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       | 0.31                                                                              | 0.31                                                                              |                                                                                   |                                                                                   | 0.30                                                                              |                                                                                   |                                                                                    | 0.57                                                                                |                                                                                     |                                                                                     | 0.33                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 56 (47%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.52

Intersection Signal Delay: 4.2

Intersection LOS: A

Intersection Capacity Utilization 73.9%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Driveway

|                                                                                            |                                                                                          |                                                                                          |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø2 (R) |  Ø4 |  Ø8 |
| 95 s                                                                                       | 14 s                                                                                     | 11 s                                                                                     |
|  Ø6 (R) |  Ø5 |                                                                                          |
| 84.1 s                                                                                     | 10.9 s                                                                                   |                                                                                          |

# 104: Route 58 (Black Rock Turnpike) & Fairfield Woods Road Lanes, Volumes, Timings

2040 Improved Concept A

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |                                                                                   |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Lane Configurations     |  |  |  |                                                                                   |  |  |
| Traffic Volume (vph)    | 50                                                                                | 340                                                                               | 788                                                                               | 25                                                                                | 84                                                                                | 536                                                                               |
| Future Volume (vph)     | 50                                                                                | 340                                                                               | 788                                                                               | 25                                                                                | 84                                                                                | 536                                                                               |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                |
| Storage Length (ft)     | 0                                                                                 | 75                                                                                |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |
| Storage Lanes           | 1                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   |
| Taper Length (ft)       | 25                                                                                |                                                                                   |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     |                                                                                   | 0.850                                                                             | 0.995                                                                             |                                                                                   |                                                                                   |                                                                                   |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |
| Satd. Flow (prot)       | 1752                                                                              | 1516                                                                              | 3371                                                                              | 0                                                                                 | 1752                                                                              | 1783                                                                              |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.242                                                                             |                                                                                   |
| Satd. Flow (perm)       | 1752                                                                              | 1516                                                                              | 3371                                                                              | 0                                                                                 | 446                                                                               | 1783                                                                              |
| Right Turn on Red       |                                                                                   | No                                                                                |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |
| Satd. Flow (RTOR)       |                                                                                   |                                                                                   | 3                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Link Speed (mph)        | 25                                                                                |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |
| Link Distance (ft)      | 499                                                                               |                                                                                   | 535                                                                               |                                                                                   |                                                                                   | 293                                                                               |
| Travel Time (s)         | 13.6                                                                              |                                                                                   | 12.2                                                                              |                                                                                   |                                                                                   | 6.7                                                                               |
| Peak Hour Factor        | 0.90                                                                              | 0.90                                                                              | 0.88                                                                              | 0.88                                                                              | 0.92                                                                              | 0.92                                                                              |
| Heavy Vehicles (%)      | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                |
| Adj. Flow (vph)         | 56                                                                                | 378                                                                               | 895                                                                               | 28                                                                                | 91                                                                                | 583                                                                               |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 56                                                                                | 378                                                                               | 923                                                                               | 0                                                                                 | 91                                                                                | 583                                                                               |
| Turn Type               | Prot                                                                              | Perm                                                                              | NA                                                                                |                                                                                   | pm+pt                                                                             | NA                                                                                |
| Protected Phases        | 4                                                                                 |                                                                                   | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |
| Permitted Phases        |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |
| Detector Phase          | 4                                                                                 | 4                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               | 15.0                                                                              |                                                                                   | 5.0                                                                               | 15.0                                                                              |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              | 20.3                                                                              |                                                                                   | 11.5                                                                              | 20.3                                                                              |
| Total Split (s)         | 51.0                                                                              | 51.0                                                                              | 55.0                                                                              |                                                                                   | 14.0                                                                              | 69.0                                                                              |
| Total Split (%)         | 42.5%                                                                             | 42.5%                                                                             | 45.8%                                                                             |                                                                                   | 11.7%                                                                             | 57.5%                                                                             |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               | 4.3                                                                               |                                                                                   | 4.3                                                                               | 4.3                                                                               |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               |                                                                                   | 2.2                                                                               | 1.0                                                                               |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               | 5.3                                                                               |                                                                                   | 6.5                                                                               | 5.3                                                                               |
| Lead/Lag                |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   | Lag                                                                               |                                                                                   |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   | Yes                                                                               |                                                                                   |
| Recall Mode             | None                                                                              | None                                                                              | C-Min                                                                             |                                                                                   | None                                                                              | C-Min                                                                             |
| Act Effect Green (s)    | 35.0                                                                              | 35.0                                                                              | 64.2                                                                              |                                                                                   | 74.5                                                                              | 75.7                                                                              |
| Actuated g/C Ratio      | 0.29                                                                              | 0.29                                                                              | 0.54                                                                              |                                                                                   | 0.62                                                                              | 0.63                                                                              |
| v/c Ratio               | 0.11                                                                              | 0.86                                                                              | 0.51                                                                              |                                                                                   | 0.27                                                                              | 0.52                                                                              |
| Control Delay           | 28.6                                                                              | 57.9                                                                              | 20.4                                                                              |                                                                                   | 6.1                                                                               | 5.2                                                                               |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.3                                                                               |
| Total Delay             | 28.6                                                                              | 57.9                                                                              | 20.4                                                                              |                                                                                   | 6.1                                                                               | 5.5                                                                               |
| LOS                     | C                                                                                 | E                                                                                 | C                                                                                 |                                                                                   | A                                                                                 | A                                                                                 |
| Approach Delay          | 54.1                                                                              |                                                                                   | 20.4                                                                              |                                                                                   |                                                                                   | 5.5                                                                               |
| Approach LOS            | D                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 |



# 104: Route 58 (Black Rock Turnpike) & Fairfield Woods Road Lanes, Volumes, Timings

2040 Improved Concept A  
Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Queue Length 50th (ft)  | 32                                                                                | 275                                                                               | 232                                                                               |                                                                                   | 8                                                                                 | 52                                                                                |
| Queue Length 95th (ft)  | 57                                                                                | 354                                                                               | 334                                                                               |                                                                                   | 22                                                                                | 104                                                                               |
| Internal Link Dist (ft) | 419                                                                               |                                                                                   | 455                                                                               |                                                                                   |                                                                                   | 213                                                                               |
| Turn Bay Length (ft)    |                                                                                   | 75                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Base Capacity (vph)     | 686                                                                               | 593                                                                               | 1804                                                                              |                                                                                   | 367                                                                               | 1124                                                                              |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 135                                                                               |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |
| Reduced v/c Ratio       | 0.08                                                                              | 0.64                                                                              | 0.51                                                                              |                                                                                   | 0.25                                                                              | 0.59                                                                              |

## Intersection Summary

Area Type: Other  
Cycle Length: 120  
Actuated Cycle Length: 120  
Offset: 24 (20%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow  
Natural Cycle: 60  
Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 0.86  
Intersection Signal Delay: 22.7  
Intersection Capacity Utilization 51.4%  
Analysis Period (min) 15

Intersection LOS: C  
ICU Level of Service A

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Fairfield Woods Road

|                                                                                            |                                                                                        |                                                                                        |
|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
|  Ø2 (R) |  Ø1 |  Ø4 |
| 55 s                                                                                       | 14 s                                                                                   | 51 s                                                                                   |
|  Ø6 (R) |                                                                                        |                                                                                        |
| 69 s                                                                                       |                                                                                        |                                                                                        |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Improved Concept A Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (vph)    | 48                                                                                | 379                                                                               | 133                                                                               | 178                                                                               | 685                                                                               | 71                                                                                | 150                                                                                 | 165                                                                                 | 62                                                                                  | 108                                                                                 | 351                                                                                 | 46                                                                                  |
| Future Volume (vph)     | 48                                                                                | 379                                                                               | 133                                                                               | 178                                                                               | 685                                                                               | 71                                                                                | 150                                                                                 | 165                                                                                 | 62                                                                                  | 108                                                                                 | 351                                                                                 | 46                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 11                                                                                | 11                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                  | 11                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 200                                                                               |                                                                                   | 325                                                                               | 200                                                                               |                                                                                   | 0                                                                                 | 400                                                                                 |                                                                                     | 75                                                                                  | 170                                                                                 |                                                                                     | 75                                                                                  |
| Storage Lanes           | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                   |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)       | 85                                                                                |                                                                                   |                                                                                   | 50                                                                                |                                                                                   |                                                                                   | 100                                                                                 |                                                                                     |                                                                                     | 100                                                                                 |                                                                                     |                                                                                     |
| Lane Util. Factor       | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.961                                                                             |                                                                                   |                                                                                   | 0.986                                                                             |                                                                                   |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1678                                                                              | 3225                                                                              | 0                                                                                 | 1678                                                                              | 3423                                                                              | 0                                                                                 | 1678                                                                                | 1766                                                                                | 1553                                                                                | 1736                                                                                | 1827                                                                                | 1553                                                                                |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.233                                                                               |                                                                                     |                                                                                     | 0.579                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 1678                                                                              | 3225                                                                              | 0                                                                                 | 1678                                                                              | 3423                                                                              | 0                                                                                 | 411                                                                                 | 1766                                                                                | 1553                                                                                | 1058                                                                                | 1827                                                                                | 1553                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | No                                                                                  |
| Satd. Flow (RTOR)       |                                                                                   | 34                                                                                |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                     |                                                                                     | 186                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 628                                                                               |                                                                                   |                                                                                   | 408                                                                               |                                                                                   |                                                                                     | 637                                                                                 |                                                                                     |                                                                                     | 355                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 14.3                                                                              |                                                                                   |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                     | 14.5                                                                                |                                                                                     |                                                                                     | 9.7                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                | 0.81                                                                                | 0.81                                                                                | 0.81                                                                                |
| Heavy Vehicles (%)      | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  |
| Adj. Flow (vph)         | 55                                                                                | 431                                                                               | 151                                                                               | 207                                                                               | 797                                                                               | 83                                                                                | 188                                                                                 | 206                                                                                 | 78                                                                                  | 133                                                                                 | 433                                                                                 | 57                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 55                                                                                | 582                                                                               | 0                                                                                 | 207                                                                               | 880                                                                               | 0                                                                                 | 188                                                                                 | 206                                                                                 | 78                                                                                  | 133                                                                                 | 433                                                                                 | 57                                                                                  |
| Turn Type               | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | NA                                                                                |                                                                                   | pm+pt                                                                               | NA                                                                                  | Perm                                                                                | pm+pt                                                                               | NA                                                                                  | Perm                                                                                |
| Protected Phases        | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 7                                                                                   | 4                                                                                   |                                                                                     | 3                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   | 8                                                                                   |                                                                                     | 8                                                                                   |
| Detector Phase          | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 7                                                                                   | 4                                                                                   | 4                                                                                   | 3                                                                                   | 8                                                                                   | 8                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 15.0                                                                              |                                                                                   | 5.0                                                                               | 15.0                                                                              |                                                                                   | 5.0                                                                                 | 10.0                                                                                | 10.0                                                                                | 5.0                                                                                 | 10.0                                                                                | 10.0                                                                                |
| Minimum Split (s)       | 9.7                                                                               | 21.6                                                                              |                                                                                   | 9.7                                                                               | 21.6                                                                              |                                                                                   | 9.3                                                                                 | 16.8                                                                                | 16.8                                                                                | 9.3                                                                                 | 16.8                                                                                | 16.8                                                                                |
| Total Split (s)         | 12.0                                                                              | 27.0                                                                              |                                                                                   | 20.0                                                                              | 35.0                                                                              |                                                                                   | 12.0                                                                                | 32.1                                                                                | 32.1                                                                                | 12.9                                                                                | 33.0                                                                                | 33.0                                                                                |
| Total Split (%)         | 9.6%                                                                              | 21.6%                                                                             |                                                                                   | 16.0%                                                                             | 28.0%                                                                             |                                                                                   | 9.6%                                                                                | 25.7%                                                                               | 25.7%                                                                               | 10.3%                                                                               | 26.4%                                                                               | 26.4%                                                                               |
| Yellow Time (s)         | 3.0                                                                               | 4.1                                                                               |                                                                                   | 3.0                                                                               | 4.1                                                                               |                                                                                   | 3.3                                                                                 | 4.4                                                                                 | 4.4                                                                                 | 3.3                                                                                 | 4.4                                                                                 | 4.4                                                                                 |
| All-Red Time (s)        | 1.7                                                                               | 2.5                                                                               |                                                                                   | 1.7                                                                               | 2.5                                                                               |                                                                                   | 1.0                                                                                 | 2.4                                                                                 | 2.4                                                                                 | 1.0                                                                                 | 2.4                                                                                 | 2.4                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 4.7                                                                               | 6.6                                                                               |                                                                                   | 4.7                                                                               | 6.6                                                                               |                                                                                   | 4.3                                                                                 | 6.8                                                                                 | 6.8                                                                                 | 4.3                                                                                 | 6.8                                                                                 | 6.8                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode             | None                                                                              | Min                                                                               |                                                                                   | None                                                                              | Min                                                                               |                                                                                   | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Act Effect Green (s)    | 6.8                                                                               | 20.4                                                                              |                                                                                   | 15.3                                                                              | 30.9                                                                              |                                                                                   | 36.2                                                                                | 26.0                                                                                | 26.0                                                                                | 36.6                                                                                | 26.2                                                                                | 26.2                                                                                |
| Actuated g/C Ratio      | 0.07                                                                              | 0.22                                                                              |                                                                                   | 0.17                                                                              | 0.34                                                                              |                                                                                   | 0.39                                                                                | 0.28                                                                                | 0.28                                                                                | 0.40                                                                                | 0.28                                                                                | 0.28                                                                                |
| v/c Ratio               | 0.44                                                                              | 0.79                                                                              |                                                                                   | 0.74                                                                              | 0.76                                                                              |                                                                                   | 0.70                                                                                | 0.41                                                                                | 0.14                                                                                | 0.28                                                                                | 0.83                                                                                | 0.13                                                                                |
| Control Delay           | 52.1                                                                              | 40.5                                                                              |                                                                                   | 54.1                                                                              | 33.3                                                                              |                                                                                   | 33.5                                                                                | 30.2                                                                                | 0.5                                                                                 | 17.3                                                                                | 46.6                                                                                | 25.5                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 52.1                                                                              | 40.5                                                                              |                                                                                   | 54.1                                                                              | 33.3                                                                              |                                                                                   | 33.5                                                                                | 30.2                                                                                | 0.5                                                                                 | 17.3                                                                                | 46.6                                                                                | 25.5                                                                                |
| LOS                     | D                                                                                 | D                                                                                 |                                                                                   | D                                                                                 | C                                                                                 |                                                                                   | C                                                                                   | C                                                                                   | A                                                                                   | B                                                                                   | D                                                                                   | C                                                                                   |
| Approach Delay          |                                                                                   | 41.5                                                                              |                                                                                   |                                                                                   | 37.2                                                                              |                                                                                   |                                                                                     | 26.6                                                                                |                                                                                     |                                                                                     | 38.4                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Improved Concept A Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |      |
|-------------------------|------|
| Lane Group              | Ø9   |
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Heavy Vehicles (%)      |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 33.0 |
| Total Split (s)         | 33.0 |
| Total Split (%)         | 26%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Improved Concept A Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  | 31                                                                                | 159                                                                               |                                                                                   | 116                                                                               | 247                                                                               |                                                                                   | 67                                                                                 | 98                                                                                  | 0                                                                                   | 45                                                                                  | 236                                                                                 | 25                                                                                  |
| Queue Length 95th (ft)  | 68                                                                                | 214                                                                               |                                                                                   | #202                                                                              | 303                                                                               |                                                                                   | 98                                                                                 | 142                                                                                 | 0                                                                                   | 73                                                                                  | #308                                                                                | 49                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 548                                                                               |                                                                                   |                                                                                   | 328                                                                               |                                                                                   |                                                                                    | 557                                                                                 |                                                                                     |                                                                                     | 275                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 200                                                                               |                                                                                   |                                                                                   | 200                                                                               |                                                                                   |                                                                                   | 400                                                                                |                                                                                     | 75                                                                                  | 170                                                                                 |                                                                                     | 75                                                                                  |
| Base Capacity (vph)     | 133                                                                               | 741                                                                               |                                                                                   | 279                                                                               | 1154                                                                              |                                                                                   | 267                                                                                | 498                                                                                 | 571                                                                                 | 492                                                                                 | 520                                                                                 | 442                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.41                                                                              | 0.79                                                                              |                                                                                   | 0.74                                                                              | 0.76                                                                              |                                                                                   | 0.70                                                                               | 0.41                                                                                | 0.14                                                                                | 0.27                                                                                | 0.83                                                                                | 0.13                                                                                |

## Intersection Summary

Area Type: Other

Cycle Length: 125

Actuated Cycle Length: 92

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 36.7

Intersection LOS: D

Intersection Capacity Utilization 70.8%

ICU Level of Service C

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)

|                                                                                        |                                                                                        |                                                                                        |                                                                                          |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø9 |  Ø3 |  Ø4 |
| 20 s                                                                                   | 27 s                                                                                   | 33 s                                                                                   | 12.9 s                                                                                   | 32.1 s                                                                                   |
|  Ø5 |  Ø6 |                                                                                        |  Ø7 |  Ø8 |
| 12 s                                                                                   | 35 s                                                                                   |                                                                                        | 12 s                                                                                     | 33 s                                                                                     |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø9 |
| Queue Length 50th (ft)  |    |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & 2040-50 Black Rock Turnpike Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |  |  |                                                                                   |                                                                                    |                                                                                     |  |                                                                                     |                                                                                     |  |
| Traffic Volume (vph)    | 24                                                                                | 483                                                                               | 8                                                                                 | 26                                                                                | 955                                                                               | 47                                                                                | 0                                                                                  | 0                                                                                   | 76                                                                                  | 0                                                                                   | 0                                                                                   | 11                                                                                  |
| Future Volume (vph)     | 24                                                                                | 483                                                                               | 8                                                                                 | 26                                                                                | 955                                                                               | 47                                                                                | 0                                                                                  | 0                                                                                   | 76                                                                                  | 0                                                                                   | 0                                                                                   | 11                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                 | 13                                                                                  | 13                                                                                  | 12                                                                                  | 13                                                                                  | 13                                                                                  |
| Storage Length (ft)     | 65                                                                                |                                                                                   | 0                                                                                 | 100                                                                               |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 25                                                                                  | 0                                                                                   |                                                                                     | 25                                                                                  |
| Storage Lanes           | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 50                                                                                |                                                                                   |                                                                                   | 50                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   | 0.993                                                                             |                                                                                   |                                                                                    |                                                                                     | 0.865                                                                               |                                                                                     |                                                                                     | 0.865                                                                               |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1736                                                                              | 3349                                                                              | 0                                                                                 | 1736                                                                              | 1754                                                                              | 0                                                                                 | 0                                                                                  | 0                                                                                   | 1633                                                                                | 0                                                                                   | 0                                                                                   | 1633                                                                                |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 1736                                                                              | 3349                                                                              | 0                                                                                 | 1736                                                                              | 1754                                                                              | 0                                                                                 | 0                                                                                  | 0                                                                                   | 1633                                                                                | 0                                                                                   | 0                                                                                   | 1633                                                                                |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 401                                                                               |                                                                                   |                                                                                   | 502                                                                               |                                                                                   |                                                                                    | 114                                                                                 |                                                                                     |                                                                                     | 133                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.1                                                                               |                                                                                   |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                    | 3.1                                                                                 |                                                                                     |                                                                                     | 3.6                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.80                                                                               | 0.80                                                                                | 0.80                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Heavy Vehicles (%)      | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                 | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  |
| Adj. Flow (vph)         | 30                                                                                | 604                                                                               | 10                                                                                | 29                                                                                | 1073                                                                              | 53                                                                                | 0                                                                                  | 0                                                                                   | 95                                                                                  | 0                                                                                   | 0                                                                                   | 12                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 30                                                                                | 614                                                                               | 0                                                                                 | 29                                                                                | 1126                                                                              | 0                                                                                 | 0                                                                                  | 0                                                                                   | 95                                                                                  | 0                                                                                   | 0                                                                                   | 12                                                                                  |
| Sign Control            |                                                                                   | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              |                                                                                   |                                                                                    | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 63.1%

ICU Level of Service B

Analysis Period (min) 15



106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & 2040-50 (Black Rock Turnpike) HCM 2010 TWSC

Timing Plan: Weekday AM Peak

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1    |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      | ↰    | ↱↰   |      | ↰    | ↱    |      |      |      | ↱    |      |      | ↱    |
| Traffic Vol, veh/h       | 24   | 483  | 8    | 26   | 955  | 47   | 0    | 0    | 76   | 0    | 0    | 11   |
| Future Vol, veh/h        | 24   | 483  | 8    | 26   | 955  | 47   | 0    | 0    | 76   | 0    | 0    | 11   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | 65   | -    | -    | 100  | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 80   | 80   | 80   | 89   | 89   | 89   | 80   | 80   | 80   | 91   | 91   | 91   |
| Heavy Vehicles, %        | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| Mvmt Flow                | 30   | 604  | 10   | 29   | 1073 | 53   | 0    | 0    | 95   | 0    | 0    | 12   |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |   |       | Minor2 |   |       |
|----------------------|--------|---|---|--------|---|---|--------|---|-------|--------|---|-------|
| Conflicting Flow All | 1126   | 0 | 0 | 614    | 0 | 0 | -      | - | 307   | -      | - | 1100  |
| Stage 1              | -      | - | - | -      | - | - | -      | - | -     | -      | - | -     |
| Stage 2              | -      | - | - | -      | - | - | -      | - | -     | -      | - | -     |
| Critical Hdwy        | 4.16   | - | - | 4.16   | - | - | -      | - | 6.96  | -      | - | 6.26  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | -      | - | -     | -      | - | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | -      | - | -     | -      | - | -     |
| Follow-up Hdwy       | 2.238  | - | - | 2.238  | - | - | -      | - | 3.338 | -      | - | 3.338 |
| Pot Cap-1 Maneuver   | 609    | - | - | 952    | - | - | 0      | 0 | 685   | 0      | 0 | 254   |
| Stage 1              | -      | - | - | -      | - | - | 0      | 0 | -     | 0      | 0 | -     |
| Stage 2              | -      | - | - | -      | - | - | 0      | 0 | -     | 0      | 0 | -     |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | - | -     | -      | - | -     |
| Mov Cap-1 Maneuver   | 609    | - | - | 952    | - | - | -      | - | 685   | -      | - | 254   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | -      | - | -     | -      | - | -     |
| Stage 1              | -      | - | - | -      | - | - | -      | - | -     | -      | - | -     |
| Stage 2              | -      | - | - | -      | - | - | -      | - | -     | -      | - | -     |

| Approach             | EB  |  |  | WB  |  |  | NB   |  |  | SB   |  |  |
|----------------------|-----|--|--|-----|--|--|------|--|--|------|--|--|
| HCM Control Delay, s | 0.5 |  |  | 0.2 |  |  | 11.1 |  |  | 19.9 |  |  |
| HCM LOS              |     |  |  |     |  |  | B    |  |  | C    |  |  |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 685   | 609   | -   | -   | 952   | -   | -   | 254   |
| HCM Lane V/C Ratio    | 0.139 | 0.049 | -   | -   | 0.031 | -   | -   | 0.048 |
| HCM Control Delay (s) | 11.1  | 11.2  | -   | -   | 8.9   | -   | -   | 19.9  |
| HCM Lane LOS          | B     | B     | -   | -   | A     | -   | -   | C     |
| HCM 95th %tile Q(veh) | 0.5   | 0.2   | -   | -   | 0.1   | -   | -   | 0.1   |

## 108: Burroughs Road &amp; Route 58 (Black Rock Turnpike)

## 2040 Improved Concept A

## Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |                                                                                   |  |  |                                                                                    |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (vph)    | 29                                                                                | 464                                                                               | 8                                                                                 | 0                                                                                 | 968                                                                               | 71                                                                                | 7                                                                                  | 88                                                                                  | 3                                                                                   | 146                                                                                 | 76                                                                                  | 75                                                                                  |
| Future Volume (vph)     | 29                                                                                | 464                                                                               | 8                                                                                 | 0                                                                                 | 968                                                                               | 71                                                                                | 7                                                                                  | 88                                                                                  | 3                                                                                   | 146                                                                                 | 76                                                                                  | 75                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                 | 16                                                                                  | 12                                                                                  | 12                                                                                  | 16                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 65                                                                                |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 130                                                                               | 0                                                                                  |                                                                                     | 0                                                                                   | 125                                                                                 |                                                                                     | 0                                                                                   |
| Storage Lanes           | 1                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 1                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 50                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 50                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                    | 0.996                                                                               |                                                                                     |                                                                                     | 0.925                                                                               |                                                                                     |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 0.996                                                                               |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1719                                                                              | 3314                                                                              | 0                                                                                 | 0                                                                                 | 1749                                                                              | 1538                                                                              | 0                                                                                  | 2034                                                                                | 0                                                                                   | 1719                                                                                | 1897                                                                                | 0                                                                                   |
| Flt Permitted           | 0.123                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 0.966                                                                               |                                                                                     | 0.753                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 223                                                                               | 3314                                                                              | 0                                                                                 | 0                                                                                 | 1749                                                                              | 1538                                                                              | 0                                                                                  | 1973                                                                                | 0                                                                                   | 1363                                                                                | 1897                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   |                                                                                   | 73                                                                                |                                                                                    | 2                                                                                   |                                                                                     |                                                                                     | 61                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 407                                                                               |                                                                                   |                                                                                   | 390                                                                               |                                                                                   |                                                                                    | 466                                                                                 |                                                                                     |                                                                                     | 265                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                   | 8.9                                                                               |                                                                                   |                                                                                    | 12.7                                                                                |                                                                                     |                                                                                     | 7.2                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.80                                                                               | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                |
| Heavy Vehicles (%)      | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                 | 5%                                                                                  | 5%                                                                                  | 5%                                                                                  | 5%                                                                                  | 5%                                                                                  |
| Adj. Flow (vph)         | 36                                                                                | 580                                                                               | 10                                                                                | 0                                                                                 | 1019                                                                              | 75                                                                                | 9                                                                                  | 110                                                                                 | 4                                                                                   | 183                                                                                 | 95                                                                                  | 94                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 36                                                                                | 590                                                                               | 0                                                                                 | 0                                                                                 | 1019                                                                              | 75                                                                                | 0                                                                                  | 123                                                                                 | 0                                                                                   | 183                                                                                 | 189                                                                                 | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   |                                                                                   | NA                                                                                | Perm                                                                              | Perm                                                                               | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 2                                                                                 | 4                                                                                  |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 6                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 | 2                                                                                 | 4                                                                                  | 4                                                                                   |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 15.0                                                                              | 15.0                                                                              |                                                                                   |                                                                                   | 15.0                                                                              | 15.0                                                                              | 9.0                                                                                | 9.0                                                                                 |                                                                                     | 9.0                                                                                 | 9.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 20.6                                                                              | 20.6                                                                              |                                                                                   |                                                                                   | 20.6                                                                              | 20.6                                                                              | 14.4                                                                               | 14.4                                                                                |                                                                                     | 14.4                                                                                | 14.4                                                                                |                                                                                     |
| Total Split (s)         | 53.0                                                                              | 53.0                                                                              |                                                                                   |                                                                                   | 53.0                                                                              | 53.0                                                                              | 17.0                                                                               | 17.0                                                                                |                                                                                     | 17.0                                                                                | 17.0                                                                                |                                                                                     |
| Total Split (%)         | 75.7%                                                                             | 75.7%                                                                             |                                                                                   |                                                                                   | 75.7%                                                                             | 75.7%                                                                             | 24.3%                                                                              | 24.3%                                                                               |                                                                                     | 24.3%                                                                               | 24.3%                                                                               |                                                                                     |
| Yellow Time (s)         | 4.1                                                                               | 4.1                                                                               |                                                                                   |                                                                                   | 4.1                                                                               | 4.1                                                                               | 3.1                                                                                | 3.1                                                                                 |                                                                                     | 3.1                                                                                 | 3.1                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.5                                                                               | 1.5                                                                               |                                                                                   |                                                                                   | 1.5                                                                               | 1.5                                                                               | 2.3                                                                                | 2.3                                                                                 |                                                                                     | 2.3                                                                                 | 2.3                                                                                 |                                                                                     |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     | 5.6                                                                               | 5.6                                                                               |                                                                                   |                                                                                   | 5.6                                                                               | 5.6                                                                               |                                                                                    | 5.4                                                                                 |                                                                                     | 5.4                                                                                 | 5.4                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | Min                                                                               | Min                                                                               |                                                                                   |                                                                                   | Min                                                                               | Min                                                                               | None                                                                               | None                                                                                |                                                                                     | None                                                                                | None                                                                                |                                                                                     |
| Act Effect Green (s)    | 40.0                                                                              | 40.0                                                                              |                                                                                   |                                                                                   | 40.0                                                                              | 40.0                                                                              |                                                                                    | 11.3                                                                                |                                                                                     | 11.3                                                                                | 11.3                                                                                |                                                                                     |
| Actuated g/C Ratio      | 0.64                                                                              | 0.64                                                                              |                                                                                   |                                                                                   | 0.64                                                                              | 0.64                                                                              |                                                                                    | 0.18                                                                                |                                                                                     | 0.18                                                                                | 0.18                                                                                |                                                                                     |
| v/c Ratio               | 0.25                                                                              | 0.28                                                                              |                                                                                   |                                                                                   | 0.91                                                                              | 0.07                                                                              |                                                                                    | 0.35                                                                                |                                                                                     | 0.75                                                                                | 0.48                                                                                |                                                                                     |
| Control Delay           | 9.6                                                                               | 5.0                                                                               |                                                                                   |                                                                                   | 23.6                                                                              | 1.4                                                                               |                                                                                    | 28.2                                                                                |                                                                                     | 49.3                                                                                | 22.7                                                                                |                                                                                     |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Delay             | 9.6                                                                               | 5.0                                                                               |                                                                                   |                                                                                   | 23.6                                                                              | 1.4                                                                               |                                                                                    | 28.2                                                                                |                                                                                     | 49.3                                                                                | 22.7                                                                                |                                                                                     |
| LOS                     | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   | C                                                                                 | A                                                                                 |                                                                                    | C                                                                                   |                                                                                     | D                                                                                   | C                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 5.3                                                                               |                                                                                   |                                                                                   | 22.1                                                                              |                                                                                   |                                                                                    | 28.2                                                                                |                                                                                     |                                                                                     | 35.8                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |

108: Burroughs Road & Route 58 (Black Rock Turnpike)  
Lanes, Volumes, Timings

2040 Improved Concept A  
Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  | 5                                                                                 | 43                                                                                |                                                                                   |                                                                                   | 282                                                                               | 0                                                                                 |                                                                                    | 47                                                                                  |                                                                                     | 77                                                                                  | 50                                                                                  |                                                                                     |
| Queue Length 95th (ft)  | 16                                                                                | 53                                                                                |                                                                                   |                                                                                   | #609                                                                              | 11                                                                                |                                                                                    | 82                                                                                  |                                                                                     | #148                                                                                | 91                                                                                  |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 327                                                                               |                                                                                   |                                                                                   | 310                                                                               |                                                                                   |                                                                                    | 386                                                                                 |                                                                                     |                                                                                     | 185                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 65                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 130                                                                               |                                                                                    |                                                                                     |                                                                                     | 125                                                                                 |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 171                                                                               | 2544                                                                              |                                                                                   |                                                                                   | 1342                                                                              | 1197                                                                              |                                                                                    | 379                                                                                 |                                                                                     | 261                                                                                 | 412                                                                                 |                                                                                     |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       | 0.21                                                                              | 0.23                                                                              |                                                                                   |                                                                                   | 0.76                                                                              | 0.06                                                                              |                                                                                    | 0.32                                                                                |                                                                                     | 0.70                                                                                | 0.46                                                                                |                                                                                     |

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 62.6

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 20.0

Intersection LOS: B

Intersection Capacity Utilization 74.9%

ICU Level of Service D

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)

|                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø2 |  Ø4 |
| 53 s                                                                                   | 17 s                                                                                     |
|  Ø6 |  Ø8 |
| 53 s                                                                                   | 17 s                                                                                     |

201: Tunxis Hill Road & Route 58 (Tunxis Hill Cutoff)  
Lanes, Volumes, Timings

2040 Improved Concept A  
Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |  |
| Traffic Volume (vph)    | 271                                                                               | 2                                                                                 | 64                                                                                | 633                                                                               | 0                                                                                 | 61                                                                                |
| Future Volume (vph)     | 271                                                                               | 2                                                                                 | 64                                                                                | 633                                                                               | 0                                                                                 | 61                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 10                                                                                | 10                                                                                |
| Storage Length (ft)     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 50                                                                                |
| Storage Lanes           |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |
| Taper Length (ft)       |                                                                                   |                                                                                   | 25                                                                                |                                                                                   | 25                                                                                |                                                                                   |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.999                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |
| Flt Protected           |                                                                                   |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 3352                                                                              | 0                                                                                 | 0                                                                                 | 1757                                                                              | 1705                                                                              | 1449                                                                              |
| Flt Permitted           |                                                                                   |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 3352                                                                              | 0                                                                                 | 0                                                                                 | 1757                                                                              | 1705                                                                              | 1449                                                                              |
| Link Speed (mph)        | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                | 25                                                                                |                                                                                   |
| Link Distance (ft)      | 1095                                                                              |                                                                                   |                                                                                   | 214                                                                               | 782                                                                               |                                                                                   |
| Travel Time (s)         | 24.9                                                                              |                                                                                   |                                                                                   | 4.9                                                                               | 21.3                                                                              |                                                                                   |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.91                                                                              | 0.91                                                                              | 0.80                                                                              | 0.80                                                                              |
| Heavy Vehicles (%)      | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                |
| Adj. Flow (vph)         | 339                                                                               | 3                                                                                 | 70                                                                                | 696                                                                               | 0                                                                                 | 76                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 342                                                                               | 0                                                                                 | 0                                                                                 | 766                                                                               | 0                                                                                 | 76                                                                                |
| Sign Control            | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 51.1% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1.1

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↑↑   |      |      | ↑    | ↑    | ↑    |
| Traffic Vol, veh/h       | 271  | 2    | 64   | 633  | 0    | 61   |
| Future Vol, veh/h        | 271  | 2    | 64   | 633  | 0    | 61   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | 0    | 50   |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 80   | 80   | 91   | 91   | 80   | 80   |
| Heavy Vehicles, %        | 4    | 4    | 4    | 4    | 4    | 4    |
| Mvmt Flow                | 339  | 3    | 70   | 696  | 0    | 76   |

| Major/Minor          | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0      | 0      | 342    |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Critical Hdwy        | -      | -      | 4.16   |
| Critical Hdwy Stg 1  | -      | -      | -      |
| Critical Hdwy Stg 2  | -      | -      | -      |
| Follow-up Hdwy       | -      | -      | 2.238  |
| Pot Cap-1 Maneuver   | -      | -      | 1203   |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | -      | -      | 1203   |
| Mov Cap-2 Maneuver   | -      | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |

| Approach             | EB | WB  | NB  |
|----------------------|----|-----|-----|
| HCM Control Delay, s | 0  | 0.8 | 9.7 |
| HCM LOS              |    |     | A   |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | -     | 838   | -   | -   | 1203  | -   |
| HCM Lane V/C Ratio    | -     | 0.091 | -   | -   | 0.058 | -   |
| HCM Control Delay (s) | 0     | 9.7   | -   | -   | 8.2   | 0   |
| HCM Lane LOS          | A     | A     | -   | -   | A     | A   |
| HCM 95th %tile Q(veh) | -     | 0.3   | -   | -   | 0.2   | -   |

202: Route 732 (Black Rock Turnpike) & Judd Street  
Lanes, Volumes, Timings

2040 Improved Concept A

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations     |  |                                                                                   |  |  |  |                                                                                   |
| Traffic Volume (vph)    | 20                                                                                | 68                                                                                | 76                                                                                | 357                                                                               | 394                                                                               | 32                                                                                |
| Future Volume (vph)     | 20                                                                                | 68                                                                                | 76                                                                                | 357                                                                               | 394                                                                               | 32                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Storage Length (ft)     | 0                                                                                 | 0                                                                                 | 25                                                                                |                                                                                   |                                                                                   | 0                                                                                 |
| Storage Lanes           | 1                                                                                 | 0                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.896                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.990                                                                             |                                                                                   |
| Flt Protected           | 0.989                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1817                                                                              | 0                                                                                 | 1719                                                                              | 1810                                                                              | 1791                                                                              | 0                                                                                 |
| Flt Permitted           | 0.989                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1817                                                                              | 0                                                                                 | 1719                                                                              | 1810                                                                              | 1791                                                                              | 0                                                                                 |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 586                                                                               |                                                                                   |                                                                                   | 395                                                                               | 218                                                                               |                                                                                   |
| Travel Time (s)         | 16.0                                                                              |                                                                                   |                                                                                   | 9.0                                                                               | 5.0                                                                               |                                                                                   |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |
| Heavy Vehicles (%)      | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                |
| Adj. Flow (vph)         | 25                                                                                | 85                                                                                | 83                                                                                | 388                                                                               | 428                                                                               | 35                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 110                                                                               | 0                                                                                 | 83                                                                                | 388                                                                               | 463                                                                               | 0                                                                                 |
| Sign Control            | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 42.2% ICU Level of Service A

Analysis Period (min) 15



Intersection

Int Delay, s/veh 2.3

| Movement                 | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |
|--------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |  |      |  |  |  |      |
| Traffic Vol, veh/h       | 20                                                                                | 68   | 76                                                                                | 357                                                                               | 394                                                                               | 32   |
| Future Vol, veh/h        | 20                                                                                | 68   | 76                                                                                | 357                                                                               | 394                                                                               | 32   |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    |
| Sign Control             | Stop                                                                              | Stop | Free                                                                              | Free                                                                              | Free                                                                              | Free |
| RT Channelized           | -                                                                                 | None | -                                                                                 | None                                                                              | -                                                                                 | None |
| Storage Length           | 0                                                                                 | -    | 25                                                                                | -                                                                                 | -                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 80                                                                                | 80   | 92                                                                                | 92                                                                                | 92                                                                                | 92   |
| Heavy Vehicles, %        | 5                                                                                 | 5    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5    |
| Mvmt Flow                | 25                                                                                | 85   | 83                                                                                | 388                                                                               | 428                                                                               | 35   |

| Major/Minor          | Minor2 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 1000   | 446    | 463    |
| Stage 1              | 446    | -      | -      |
| Stage 2              | 554    | -      | -      |
| Critical Hdwy        | 6.45   | 6.25   | 4.15   |
| Critical Hdwy Stg 1  | 5.45   | -      | -      |
| Critical Hdwy Stg 2  | 5.45   | -      | -      |
| Follow-up Hdwy       | 3.545  | 3.345  | 2.245  |
| Pot Cap-1 Maneuver   | 266    | 606    | 1083   |
| Stage 1              | 639    | -      | -      |
| Stage 2              | 570    | -      | -      |
| Platoon blocked, %   |        |        |        |
| Mov Cap-1 Maneuver   | 246    | 606    | 1083   |
| Mov Cap-2 Maneuver   | 246    | -      | -      |
| Stage 1              | 590    | -      | -      |
| Stage 2              | 570    | -      | -      |

| Approach             | EB   | NB  | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 15.4 | 1.5 | 0  |
| HCM LOS              | C    |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1083  | -   | 455   | -   | -   |
| HCM Lane V/C Ratio    | 0.076 | -   | 0.242 | -   | -   |
| HCM Control Delay (s) | 8.6   | -   | 15.4  | -   | -   |
| HCM Lane LOS          | A     | -   | C     | -   | -   |
| HCM 95th %tile Q(veh) | 0.2   | -   | 0.9   | -   | -   |

203: Moritz Place & Route 58 (Black Rock Turnpike)  
Lanes, Volumes, Timings

2040 Improved Concept A  
Timing Plan: Weekday AM Peak

|                         | →    | ↘    | ↙    | ←    | ↖    | ↗     |
|-------------------------|------|------|------|------|------|-------|
| Lane Group              | EBT  | EBR  | WBL  | WBT  | NBL  | NBR   |
| Lane Configurations     | ↰    |      |      | ↱    |      | ↱     |
| Traffic Volume (vph)    | 615  | 1    | 0    | 956  | 0    | 3     |
| Future Volume (vph)     | 615  | 1    | 0    | 956  | 0    | 3     |
| Ideal Flow (vphpl)      | 1900 | 1900 | 1900 | 1900 | 1900 | 1900  |
| Lane Util. Factor       | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  |
| Frt                     |      |      |      |      |      | 0.865 |
| Flt Protected           |      |      |      |      |      |       |
| Satd. Flow (prot)       | 1827 | 0    | 0    | 1827 | 0    | 1580  |
| Flt Permitted           |      |      |      |      |      |       |
| Satd. Flow (perm)       | 1827 | 0    | 0    | 1827 | 0    | 1580  |
| Link Speed (mph)        | 30   |      |      | 30   | 30   |       |
| Link Distance (ft)      | 187  |      |      | 131  | 186  |       |
| Travel Time (s)         | 4.3  |      |      | 3.0  | 4.2  |       |
| Peak Hour Factor        | 0.80 | 0.80 | 0.95 | 0.95 | 0.80 | 0.80  |
| Heavy Vehicles (%)      | 4%   | 4%   | 4%   | 4%   | 4%   | 4%    |
| Adj. Flow (vph)         | 769  | 1    | 0    | 1006 | 0    | 4     |
| Shared Lane Traffic (%) |      |      |      |      |      |       |
| Lane Group Flow (vph)   | 770  | 0    | 0    | 1006 | 0    | 4     |
| Sign Control            | Free |      | Free |      | Stop |       |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 53.6% ICU Level of Service A

Analysis Period (min) 15

| Intersection             |                                                                                   |      |        |                                                                                   |        |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 0                                                                                 |      |        |                                                                                   |        |                                                                                   |
| Movement                 | EBT                                                                               | EBR  | WBL    | WBT                                                                               | NBL    | NBR                                                                               |
| Lane Configurations      |  |      |        |  |        |  |
| Traffic Vol, veh/h       | 615                                                                               | 1    | 0      | 956                                                                               | 0      | 3                                                                                 |
| Future Vol, veh/h        | 615                                                                               | 1    | 0      | 956                                                                               | 0      | 3                                                                                 |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0      | 0                                                                                 | 0      | 0                                                                                 |
| Sign Control             | Free                                                                              | Free | Free   | Free                                                                              | Stop   | Stop                                                                              |
| RT Channelized           | -                                                                                 | None | -      | None                                                                              | -      | None                                                                              |
| Storage Length           | -                                                                                 | -    | -      | -                                                                                 | -      | 0                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -    | -      | 0                                                                                 | 0      | -                                                                                 |
| Grade, %                 | 0                                                                                 | -    | -      | 0                                                                                 | 0      | -                                                                                 |
| Peak Hour Factor         | 80                                                                                | 80   | 95     | 95                                                                                | 80     | 80                                                                                |
| Heavy Vehicles, %        | 4                                                                                 | 4    | 4      | 4                                                                                 | 4      | 4                                                                                 |
| Mvmt Flow                | 769                                                                               | 1    | 0      | 1006                                                                              | 0      | 4                                                                                 |
|                          |                                                                                   |      |        |                                                                                   |        |                                                                                   |
| Major/Minor              | Major1                                                                            |      | Major2 |                                                                                   | Minor1 |                                                                                   |
| Conflicting Flow All     | 0                                                                                 | 0    | -      | -                                                                                 | -      | 770                                                                               |
| Stage 1                  | -                                                                                 | -    | -      | -                                                                                 | -      | -                                                                                 |
| Stage 2                  | -                                                                                 | -    | -      | -                                                                                 | -      | -                                                                                 |
| Critical Hdwy            | -                                                                                 | -    | -      | -                                                                                 | -      | 6.24                                                                              |
| Critical Hdwy Stg 1      | -                                                                                 | -    | -      | -                                                                                 | -      | -                                                                                 |
| Critical Hdwy Stg 2      | -                                                                                 | -    | -      | -                                                                                 | -      | -                                                                                 |
| Follow-up Hdwy           | -                                                                                 | -    | -      | -                                                                                 | -      | 3.336                                                                             |
| Pot Cap-1 Maneuver       | -                                                                                 | -    | 0      | -                                                                                 | 0      | 397                                                                               |
| Stage 1                  | -                                                                                 | -    | 0      | -                                                                                 | 0      | -                                                                                 |
| Stage 2                  | -                                                                                 | -    | 0      | -                                                                                 | 0      | -                                                                                 |
| Platoon blocked, %       | -                                                                                 | -    |        | -                                                                                 |        |                                                                                   |
| Mov Cap-1 Maneuver       | -                                                                                 | -    | -      | -                                                                                 | -      | 397                                                                               |
| Mov Cap-2 Maneuver       | -                                                                                 | -    | -      | -                                                                                 | -      | -                                                                                 |
| Stage 1                  | -                                                                                 | -    | -      | -                                                                                 | -      | -                                                                                 |
| Stage 2                  | -                                                                                 | -    | -      | -                                                                                 | -      | -                                                                                 |
|                          |                                                                                   |      |        |                                                                                   |        |                                                                                   |
|                          |                                                                                   |      |        |                                                                                   |        |                                                                                   |
| Approach                 | EB                                                                                |      | WB     |                                                                                   | NB     |                                                                                   |
| HCM Control Delay, s     | 0                                                                                 |      | 0      |                                                                                   | 14.2   |                                                                                   |
| HCM LOS                  |                                                                                   |      |        |                                                                                   | B      |                                                                                   |
|                          |                                                                                   |      |        |                                                                                   |        |                                                                                   |
|                          |                                                                                   |      |        |                                                                                   |        |                                                                                   |
| Minor Lane/Major Mvmt    | NBLn1                                                                             | EBT  | EBR    | WBT                                                                               |        |                                                                                   |
| Capacity (veh/h)         | 397                                                                               | -    | -      | -                                                                                 |        |                                                                                   |
| HCM Lane V/C Ratio       | 0.009                                                                             | -    | -      | -                                                                                 |        |                                                                                   |
| HCM Control Delay (s)    | 14.2                                                                              | -    | -      | -                                                                                 |        |                                                                                   |
| HCM Lane LOS             | B                                                                                 | -    | -      | -                                                                                 |        |                                                                                   |
| HCM 95th %tile Q(veh)    | 0                                                                                 | -    | -      | -                                                                                 |        |                                                                                   |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Talbot Drive Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 6                                                                                 | 0                                                                                 | 1                                                                                 | 46                                                                                | 0                                                                                 | 47                                                                                | 5                                                                                  | 662                                                                                 | 62                                                                                  | 58                                                                                  | 724                                                                                 | 5                                                                                   |
| Future Volume (vph)     | 6                                                                                 | 0                                                                                 | 1                                                                                 | 46                                                                                | 0                                                                                 | 47                                                                                | 5                                                                                  | 662                                                                                 | 62                                                                                  | 58                                                                                  | 724                                                                                 | 5                                                                                   |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                 | 13                                                                                  | 12                                                                                  | 12                                                                                  | 13                                                                                  | 12                                                                                  |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.985                                                                             |                                                                                   |                                                                                   | 0.932                                                                             |                                                                                   |                                                                                    | 0.989                                                                               |                                                                                     |                                                                                     | 0.999                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.957                                                                             |                                                                                   |                                                                                   | 0.976                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.996                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 1990                                                                              | 0                                                                                 | 0                                                                                 | 1920                                                                              | 0                                                                                 | 0                                                                                  | 1904                                                                                | 0                                                                                   | 0                                                                                   | 1915                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.752                                                                             |                                                                                   |                                                                                   | 0.839                                                                             |                                                                                   |                                                                                    | 0.996                                                                               |                                                                                     |                                                                                     | 0.900                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 1564                                                                              | 0                                                                                 | 0                                                                                 | 1651                                                                              | 0                                                                                 | 0                                                                                  | 1896                                                                                | 0                                                                                   | 0                                                                                   | 1731                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 27                                                                                |                                                                                   |                                                                                   | 40                                                                                |                                                                                   |                                                                                    | 14                                                                                  |                                                                                     |                                                                                     | 1                                                                                   |                                                                                     |
| Link Speed (mph)        |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 35                                                                                  |                                                                                     |                                                                                     | 35                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 378                                                                               |                                                                                   |                                                                                   | 442                                                                               |                                                                                   |                                                                                    | 1898                                                                                |                                                                                     |                                                                                     | 522                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 10.3                                                                              |                                                                                   |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                    | 37.0                                                                                |                                                                                     |                                                                                     | 10.2                                                                                |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.84                                                                              | 0.84                                                                              | 0.84                                                                              | 0.95                                                                               | 0.95                                                                                | 0.95                                                                                | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                |
| Adj. Flow (vph)         | 8                                                                                 | 0                                                                                 | 1                                                                                 | 55                                                                                | 0                                                                                 | 56                                                                                | 5                                                                                  | 697                                                                                 | 65                                                                                  | 62                                                                                  | 770                                                                                 | 5                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 9                                                                                 | 0                                                                                 | 0                                                                                 | 111                                                                               | 0                                                                                 | 0                                                                                  | 767                                                                                 | 0                                                                                   | 0                                                                                   | 837                                                                                 | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                    | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Permitted Phases        | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   | 2                                                                                  |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 4                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |                                                                                   | 2                                                                                  | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 15.0                                                                               | 15.0                                                                                |                                                                                     | 15.0                                                                                | 15.0                                                                                |                                                                                     |
| Minimum Split (s)       | 11.7                                                                              | 11.7                                                                              |                                                                                   | 11.7                                                                              | 11.7                                                                              |                                                                                   | 20.6                                                                               | 20.6                                                                                |                                                                                     | 20.6                                                                                | 20.6                                                                                |                                                                                     |
| Total Split (s)         | 19.0                                                                              | 19.0                                                                              |                                                                                   | 19.0                                                                              | 19.0                                                                              |                                                                                   | 86.0                                                                               | 86.0                                                                                |                                                                                     | 86.0                                                                                | 86.0                                                                                |                                                                                     |
| Total Split (%)         | 18.1%                                                                             | 18.1%                                                                             |                                                                                   | 18.1%                                                                             | 18.1%                                                                             |                                                                                   | 81.9%                                                                              | 81.9%                                                                               |                                                                                     | 81.9%                                                                               | 81.9%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.3                                                                               | 3.3                                                                               |                                                                                   | 3.3                                                                               | 3.3                                                                               |                                                                                   | 4.0                                                                                | 4.0                                                                                 |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.4                                                                               | 1.4                                                                               |                                                                                   | 1.4                                                                               | 1.4                                                                               |                                                                                   | 1.6                                                                                | 1.6                                                                                 |                                                                                     | 1.6                                                                                 | 1.6                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                    | 5.6                                                                                 |                                                                                     |                                                                                     | 5.6                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              |                                                                                   | C-Min                                                                              | C-Min                                                                               |                                                                                     | C-Min                                                                               | C-Min                                                                               |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 9.7                                                                               |                                                                                   |                                                                                   | 9.7                                                                               |                                                                                   |                                                                                    | 85.0                                                                                |                                                                                     |                                                                                     | 85.0                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.09                                                                              |                                                                                   |                                                                                   | 0.09                                                                              |                                                                                   |                                                                                    | 0.81                                                                                |                                                                                     |                                                                                     | 0.81                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.05                                                                              |                                                                                   |                                                                                   | 0.59                                                                              |                                                                                   |                                                                                    | 0.50                                                                                |                                                                                     |                                                                                     | 0.60                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                   | 41.9                                                                              |                                                                                   |                                                                                    | 2.7                                                                                 |                                                                                     |                                                                                     | 6.3                                                                                 |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                   | 41.9                                                                              |                                                                                   |                                                                                    | 2.7                                                                                 |                                                                                     |                                                                                     | 6.3                                                                                 |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                   | 41.9                                                                              |                                                                                   |                                                                                    | 2.7                                                                                 |                                                                                     |                                                                                     | 6.3                                                                                 |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 46                                                                                |                                                                                   |                                                                                    | 44                                                                                  |                                                                                     |                                                                                     | 152                                                                                 |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 89                                                                                |                                                                                   |                                                                                    | 20                                                                                  |                                                                                     |                                                                                     | 308                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 298                                                                               |                                                                                   |                                                                                   | 362                                                                               |                                                                                   |                                                                                    | 1818                                                                                |                                                                                     |                                                                                     | 442                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

2040 Diverged Concept A

Timing Plan: Weekday Midday P

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Base Capacity (vph)    |                                                                                   | 236                                                                               |                                                                                   |                                                                                   | 259                                                                               |                                                                                   |                                                                                    | 1536                                                                                |                                                                                     |                                                                                     | 1400                                                                                |                                                                                     |
| Starvation Cap Reductn |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   | 0.04                                                                              |                                                                                   |                                                                                   | 0.43                                                                              |                                                                                   |                                                                                    | 0.50                                                                                |                                                                                     |                                                                                     | 0.60                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 105

Actuated Cycle Length: 105

Offset: 17 (16%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 7.0

Intersection LOS: A

Intersection Capacity Utilization 93.0%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

|                                                                                          |                                                                                     |                                                                                     |
|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  Ø2 (R) |  |  |
| 86 s                                                                                     | 19 s                                                                                |                                                                                     |
|  Ø6 (R) |  |  |
| 86 s                                                                                     | 19 s                                                                                |                                                                                     |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

## Lanes, Volumes, Timings

2040 Improved Concept A

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |      |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3   |
| Lane Configurations     |  |  |  |  |  |  |      |
| Traffic Volume (vph)    | 80                                                                                | 177                                                                               | 173                                                                               | 661                                                                               | 702                                                                               | 72                                                                                |      |
| Future Volume (vph)     | 80                                                                                | 177                                                                               | 173                                                                               | 661                                                                               | 702                                                                               | 72                                                                                |      |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |      |
| Lane Width (ft)         | 10                                                                                | 10                                                                                | 11                                                                                | 11                                                                                | 12                                                                                | 12                                                                                |      |
| Storage Length (ft)     | 0                                                                                 | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   | 50                                                                                |      |
| Storage Lanes           | 1                                                                                 | 1                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 1                                                                                 |      |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |      |
| Frt                     |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |      |
| Flt Protected           | 0.950                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |      |
| Satd. Flow (prot)       | 1636                                                                              | 1463                                                                              | 1694                                                                              | 3388                                                                              | 1845                                                                              | 1568                                                                              |      |
| Flt Permitted           | 0.950                                                                             |                                                                                   | 0.271                                                                             |                                                                                   |                                                                                   |                                                                                   |      |
| Satd. Flow (perm)       | 1636                                                                              | 1463                                                                              | 483                                                                               | 3388                                                                              | 1845                                                                              | 1568                                                                              |      |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |      |
| Satd. Flow (RTOR)       |                                                                                   | 216                                                                               |                                                                                   |                                                                                   |                                                                                   | 20                                                                                |      |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 35                                                                                |                                                                                   |      |
| Link Distance (ft)      | 445                                                                               |                                                                                   |                                                                                   | 510                                                                               | 341                                                                               |                                                                                   |      |
| Travel Time (s)         | 12.1                                                                              |                                                                                   |                                                                                   | 11.6                                                                              | 6.6                                                                               |                                                                                   |      |
| Peak Hour Factor        | 0.82                                                                              | 0.82                                                                              | 0.86                                                                              | 0.86                                                                              | 0.97                                                                              | 0.97                                                                              |      |
| Heavy Vehicles (%)      | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                |      |
| Adj. Flow (vph)         | 98                                                                                | 216                                                                               | 201                                                                               | 769                                                                               | 724                                                                               | 74                                                                                |      |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Group Flow (vph)   | 98                                                                                | 216                                                                               | 201                                                                               | 769                                                                               | 724                                                                               | 74                                                                                |      |
| Turn Type               | Prot                                                                              | Perm                                                                              | pm+pt                                                                             | NA                                                                                | NA                                                                                | Perm                                                                              |      |
| Protected Phases        | 4                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 | 2                                                                                 |                                                                                   | 3    |
| Permitted Phases        |                                                                                   | 4                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |      |
| Detector Phase          | 4                                                                                 | 4                                                                                 | 1                                                                                 | 6                                                                                 | 2                                                                                 | 2                                                                                 |      |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               | 5.0                                                                               | 15.0                                                                              | 15.0                                                                              | 15.0                                                                              | 7.0  |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              | 9.2                                                                               | 21.9                                                                              | 21.9                                                                              | 21.9                                                                              | 22.0 |
| Total Split (s)         | 13.0                                                                              | 13.0                                                                              | 14.0                                                                              | 70.0                                                                              | 56.0                                                                              | 56.0                                                                              | 22.0 |
| Total Split (%)         | 12.4%                                                                             | 12.4%                                                                             | 13.3%                                                                             | 66.7%                                                                             | 53.3%                                                                             | 53.3%                                                                             | 21%  |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               | 3.2                                                                               | 4.9                                                                               | 4.9                                                                               | 4.9                                                                               | 4.0  |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 0.0  |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |      |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               | 4.2                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               |      |
| Lead/Lag                | Lag                                                                               | Lag                                                                               | Lead                                                                              |                                                                                   | Lag                                                                               | Lag                                                                               | Lead |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               | Yes  |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | C-Min                                                                             | C-Min                                                                             | C-Min                                                                             | None |
| Act Effect Green (s)    | 11.6                                                                              | 11.6                                                                              | 85.2                                                                              | 82.5                                                                              | 68.1                                                                              | 68.1                                                                              |      |
| Actuated g/C Ratio      | 0.11                                                                              | 0.11                                                                              | 0.81                                                                              | 0.79                                                                              | 0.65                                                                              | 0.65                                                                              |      |
| v/c Ratio               | 0.54                                                                              | 0.61                                                                              | 0.39                                                                              | 0.29                                                                              | 0.61                                                                              | 0.07                                                                              |      |
| Control Delay           | 55.1                                                                              | 13.7                                                                              | 5.6                                                                               | 2.6                                                                               | 10.7                                                                              | 5.3                                                                               |      |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |      |
| Total Delay             | 55.1                                                                              | 13.7                                                                              | 5.6                                                                               | 2.6                                                                               | 10.7                                                                              | 5.3                                                                               |      |
| LOS                     | E                                                                                 | B                                                                                 | A                                                                                 | A                                                                                 | B                                                                                 | A                                                                                 |      |
| Approach Delay          | 26.6                                                                              |                                                                                   |                                                                                   | 3.2                                                                               | 10.2                                                                              |                                                                                   |      |
| Approach LOS            | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 | B                                                                                 |                                                                                   |      |



# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive Lanes, Volumes, Timings

2040 Improved Concept A  
Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |    |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3 |
| Queue Length 50th (ft)  | 64                                                                                | 0                                                                                 | 16                                                                                | 42                                                                                | 147                                                                               | 7                                                                                 |    |
| Queue Length 95th (ft)  | 102                                                                               | 48                                                                                | 45                                                                                | 63                                                                                | 214                                                                               | m18                                                                               |    |
| Internal Link Dist (ft) | 365                                                                               |                                                                                   |                                                                                   | 430                                                                               | 261                                                                               |                                                                                   |    |
| Turn Bay Length (ft)    |                                                                                   | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   | 50                                                                                |    |
| Base Capacity (vph)     | 180                                                                               | 353                                                                               | 520                                                                               | 2662                                                                              | 1196                                                                              | 1024                                                                              |    |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |    |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |    |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |    |
| Reduced v/c Ratio       | 0.54                                                                              | 0.61                                                                              | 0.39                                                                              | 0.29                                                                              | 0.61                                                                              | 0.07                                                                              |    |

## Intersection Summary

Area Type: Other  
Cycle Length: 105  
Actuated Cycle Length: 105  
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow, Master Intersection  
Natural Cycle: 90  
Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 0.61  
Intersection Signal Delay: 9.4  
Intersection Capacity Utilization 66.6%  
Analysis Period (min) 15  
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

|                                                                                            |                                                                                            |                                                                                          |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø3 |  Ø4 |
| 14 s                                                                                       | 56 s                                                                                       | 22 s                                                                                     | 13 s                                                                                     |
|  Ø6 (R) |                                                                                            |                                                                                          |                                                                                          |
| 70 s                                                                                       |                                                                                            |                                                                                          |                                                                                          |

# 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Drive 2040 Improved Concept A Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 68                                                                                | 1                                                                                 | 49                                                                                | 4                                                                                 | 0                                                                                 | 25                                                                                | 54                                                                                 | 767                                                                                 | 0                                                                                   | 2                                                                                   | 792                                                                                 | 89                                                                                  |
| Future Volume (vph)     | 68                                                                                | 1                                                                                 | 49                                                                                | 4                                                                                 | 0                                                                                 | 25                                                                                | 54                                                                                 | 767                                                                                 | 0                                                                                   | 2                                                                                   | 792                                                                                 | 89                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                 | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 50                                                                                |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 200                                                                                 |                                                                                     | 0                                                                                   |
| Storage Lanes           | 1                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 50                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 50                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                               | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Frt                     |                                                                                   | 0.870                                                                             |                                                                                   |                                                                                   | 0.884                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.985                                                                               |                                                                                     |
| Flt Protected           | 0.950                                                                             | 0.994                                                                             |                                                                                   |                                                                                   | 0.993                                                                             |                                                                                   |                                                                                    | 0.997                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1887                                                                              | 1515                                                                              | 0                                                                                 | 0                                                                                 | 1835                                                                              | 0                                                                                 | 0                                                                                  | 3494                                                                                | 0                                                                                   | 0                                                                                   | 3452                                                                                | 0                                                                                   |
| Flt Permitted           | 0.950                                                                             | 0.994                                                                             |                                                                                   |                                                                                   | 0.993                                                                             |                                                                                   |                                                                                    | 0.813                                                                               |                                                                                     |                                                                                     | 0.954                                                                               |                                                                                     |
| Satd. Flow (perm)       | 1887                                                                              | 1515                                                                              | 0                                                                                 | 0                                                                                 | 1835                                                                              | 0                                                                                 | 0                                                                                  | 2849                                                                                | 0                                                                                   | 0                                                                                   | 3293                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 57                                                                                |                                                                                   |                                                                                   | 128                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 20                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 347                                                                               |                                                                                   |                                                                                   | 133                                                                               |                                                                                   |                                                                                    | 293                                                                                 |                                                                                     |                                                                                     | 336                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.5                                                                               |                                                                                   |                                                                                   | 3.6                                                                               |                                                                                   |                                                                                    | 6.7                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.83                                                                               | 0.83                                                                                | 0.83                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                |
| Heavy Vehicles (%)      | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                 | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  |
| Adj. Flow (vph)         | 79                                                                                | 1                                                                                 | 57                                                                                | 5                                                                                 | 0                                                                                 | 31                                                                                | 65                                                                                 | 924                                                                                 | 0                                                                                   | 2                                                                                   | 808                                                                                 | 91                                                                                  |
| Shared Lane Traffic (%) | 10%                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 71                                                                                | 66                                                                                | 0                                                                                 | 0                                                                                 | 36                                                                                | 0                                                                                 | 0                                                                                  | 989                                                                                 | 0                                                                                   | 0                                                                                   | 901                                                                                 | 0                                                                                   |
| Turn Type               | Split                                                                             | NA                                                                                |                                                                                   | Split                                                                             | NA                                                                                |                                                                                   | pm+pt                                                                              | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        | 4                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 2                                                                                  |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 4                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                                | 15.0                                                                                |                                                                                     | 15.0                                                                                | 15.0                                                                                |                                                                                     |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              |                                                                                   | 9.0                                                                               | 9.0                                                                               |                                                                                   | 10.9                                                                               | 20.4                                                                                |                                                                                     | 20.4                                                                                | 20.4                                                                                |                                                                                     |
| Total Split (s)         | 16.0                                                                              | 16.0                                                                              |                                                                                   | 10.0                                                                              | 10.0                                                                              |                                                                                   | 10.9                                                                               | 79.0                                                                                |                                                                                     | 68.1                                                                                | 68.1                                                                                |                                                                                     |
| Total Split (%)         | 15.2%                                                                             | 15.2%                                                                             |                                                                                   | 9.5%                                                                              | 9.5%                                                                              |                                                                                   | 10.4%                                                                              | 75.2%                                                                               |                                                                                     | 64.9%                                                                               | 64.9%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 4.2                                                                                | 4.2                                                                                 |                                                                                     | 4.2                                                                                 | 4.2                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               |                                                                                   | 1.0                                                                               | 1.0                                                                               |                                                                                   | 1.7                                                                                | 1.2                                                                                 |                                                                                     | 1.2                                                                                 | 1.2                                                                                 |                                                                                     |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                    | 5.4                                                                                 |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Lag                                                                                |                                                                                     |                                                                                     | Lead                                                                                | Lead                                                                                |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Yes                                                                                |                                                                                     |                                                                                     | Yes                                                                                 | Yes                                                                                 |                                                                                     |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              |                                                                                   | None                                                                               | C-Min                                                                               |                                                                                     | C-Min                                                                               | C-Min                                                                               |                                                                                     |
| Act Effect Green (s)    | 9.7                                                                               | 9.7                                                                               |                                                                                   |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                    | 83.8                                                                                |                                                                                     |                                                                                     | 83.8                                                                                |                                                                                     |
| Actuated g/C Ratio      | 0.09                                                                              | 0.09                                                                              |                                                                                   |                                                                                   | 0.05                                                                              |                                                                                   |                                                                                    | 0.80                                                                                |                                                                                     |                                                                                     | 0.80                                                                                |                                                                                     |
| v/c Ratio               | 0.41                                                                              | 0.35                                                                              |                                                                                   |                                                                                   | 0.16                                                                              |                                                                                   |                                                                                    | 0.44                                                                                |                                                                                     |                                                                                     | 0.34                                                                                |                                                                                     |
| Control Delay           | 52.0                                                                              | 19.8                                                                              |                                                                                   |                                                                                   | 1.6                                                                               |                                                                                   |                                                                                    | 2.2                                                                                 |                                                                                     |                                                                                     | 1.5                                                                                 |                                                                                     |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             | 52.0                                                                              | 19.8                                                                              |                                                                                   |                                                                                   | 1.6                                                                               |                                                                                   |                                                                                    | 2.2                                                                                 |                                                                                     |                                                                                     | 1.5                                                                                 |                                                                                     |
| LOS                     | D                                                                                 | B                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 36.5                                                                              |                                                                                   |                                                                                   | 1.6                                                                               |                                                                                   |                                                                                    | 2.2                                                                                 |                                                                                     |                                                                                     | 1.5                                                                                 |                                                                                     |
| Approach LOS            |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |

# 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Driveway 2040 Improved Concept A Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  | 48                                                                                | 6                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 72                                                                                  |                                                                                     |                                                                                     | 15                                                                                  |                                                                                     |
| Queue Length 95th (ft)  | 89                                                                                | 44                                                                                |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 58                                                                                  |                                                                                     |                                                                                     | 51                                                                                  |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 267                                                                               |                                                                                   |                                                                                   | 53                                                                                |                                                                                   |                                                                                    | 213                                                                                 |                                                                                     |                                                                                     | 256                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 215                                                                               | 223                                                                               |                                                                                   |                                                                                   | 225                                                                               |                                                                                   |                                                                                    | 2273                                                                                |                                                                                     |                                                                                     | 2632                                                                                |                                                                                     |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 174                                                                                 |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       | 0.33                                                                              | 0.30                                                                              |                                                                                   |                                                                                   | 0.16                                                                              |                                                                                   |                                                                                    | 0.47                                                                                |                                                                                     |                                                                                     | 0.34                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 105

Actuated Cycle Length: 105

Offset: 47 (45%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.44

Intersection Signal Delay: 4.2

Intersection LOS: A

Intersection Capacity Utilization 70.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Driveway



# 104: Route 58 (Black Rock Turnpike) & Fairfield Woods Road

## Lanes, Volumes, Timings

2040 Improved Concept A

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Lane Configurations     |  |  |  |                                                                                   |  |  |
| Traffic Volume (vph)    | 69                                                                                | 149                                                                               | 689                                                                               | 57                                                                                | 88                                                                                | 54                                                                                |
| Future Volume (vph)     | 69                                                                                | 149                                                                               | 689                                                                               | 57                                                                                | 88                                                                                | 54                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                |
| Storage Length (ft)     | 0                                                                                 | 75                                                                                |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |
| Storage Lanes           | 1                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   |
| Taper Length (ft)       | 25                                                                                |                                                                                   |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     |                                                                                   | 0.850                                                                             | 0.989                                                                             |                                                                                   |                                                                                   |                                                                                   |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |
| Satd. Flow (prot)       | 1770                                                                              | 1531                                                                              | 3384                                                                              | 0                                                                                 | 1770                                                                              | 1801                                                                              |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.306                                                                             |                                                                                   |
| Satd. Flow (perm)       | 1770                                                                              | 1531                                                                              | 3384                                                                              | 0                                                                                 | 570                                                                               | 1801                                                                              |
| Right Turn on Red       |                                                                                   | No                                                                                |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |
| Satd. Flow (RTOR)       |                                                                                   |                                                                                   | 11                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Link Speed (mph)        | 25                                                                                |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |
| Link Distance (ft)      | 499                                                                               |                                                                                   | 535                                                                               |                                                                                   |                                                                                   | 293                                                                               |
| Travel Time (s)         | 13.6                                                                              |                                                                                   | 12.2                                                                              |                                                                                   |                                                                                   | 6.7                                                                               |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.89                                                                              | 0.89                                                                              | 0.96                                                                              | 0.96                                                                              |
| Adj. Flow (vph)         | 86                                                                                | 186                                                                               | 774                                                                               | 64                                                                                | 92                                                                                | 56                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 86                                                                                | 186                                                                               | 838                                                                               | 0                                                                                 | 92                                                                                | 56                                                                                |
| Turn Type               | Prot                                                                              | Perm                                                                              | NA                                                                                |                                                                                   | pm+pt                                                                             | NA                                                                                |
| Protected Phases        | 4                                                                                 |                                                                                   | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |
| Permitted Phases        |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |
| Detector Phase          | 4                                                                                 | 4                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               | 15.0                                                                              |                                                                                   | 5.0                                                                               | 15.0                                                                              |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              | 20.3                                                                              |                                                                                   | 11.5                                                                              | 20.3                                                                              |
| Total Split (s)         | 34.0                                                                              | 34.0                                                                              | 54.0                                                                              |                                                                                   | 17.0                                                                              | 71.0                                                                              |
| Total Split (%)         | 32.4%                                                                             | 32.4%                                                                             | 51.4%                                                                             |                                                                                   | 16.2%                                                                             | 67.6%                                                                             |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               | 4.3                                                                               |                                                                                   | 4.3                                                                               | 4.3                                                                               |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               |                                                                                   | 2.2                                                                               | 1.0                                                                               |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               | 5.3                                                                               |                                                                                   | 6.5                                                                               | 5.3                                                                               |
| Lead/Lag                |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   | Lag                                                                               |                                                                                   |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   | Yes                                                                               |                                                                                   |
| Recall Mode             | None                                                                              | None                                                                              | C-Min                                                                             |                                                                                   | None                                                                              | C-Min                                                                             |
| Act Effect Green (s)    | 17.2                                                                              | 17.2                                                                              | 69.3                                                                              |                                                                                   | 78.3                                                                              | 78.5                                                                              |
| Actuated g/C Ratio      | 0.16                                                                              | 0.16                                                                              | 0.66                                                                              |                                                                                   | 0.75                                                                              | 0.75                                                                              |
| v/c Ratio               | 0.30                                                                              | 0.74                                                                              | 0.37                                                                              |                                                                                   | 0.19                                                                              | 0.04                                                                              |
| Control Delay           | 39.5                                                                              | 58.9                                                                              | 9.8                                                                               |                                                                                   | 2.3                                                                               | 1.2                                                                               |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |
| Total Delay             | 39.5                                                                              | 58.9                                                                              | 9.8                                                                               |                                                                                   | 2.3                                                                               | 1.2                                                                               |
| LOS                     | D                                                                                 | E                                                                                 | A                                                                                 |                                                                                   | A                                                                                 | A                                                                                 |
| Approach Delay          | 52.8                                                                              |                                                                                   | 9.8                                                                               |                                                                                   |                                                                                   | 1.9                                                                               |
| Approach LOS            | D                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |
| Queue Length 50th (ft)  | 51                                                                                | 120                                                                               | 128                                                                               |                                                                                   | 2                                                                                 | 1                                                                                 |

104: Route 58 (Black Rock Turnpike) & Fairfield Woods Road  
Lanes, Volumes, Timings

2040 Improved Concept A

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Queue Length 95th (ft)  | 79                                                                                | 158                                                                               | 198                                                                               |                                                                                   | 9                                                                                 | 6                                                                                 |
| Internal Link Dist (ft) | 419                                                                               |                                                                                   | 455                                                                               |                                                                                   |                                                                                   | 213                                                                               |
| Turn Bay Length (ft)    |                                                                                   | 75                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Base Capacity (vph)     | 505                                                                               | 437                                                                               | 2237                                                                              |                                                                                   | 574                                                                               | 1346                                                                              |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |
| Reduced v/c Ratio       | 0.17                                                                              | 0.43                                                                              | 0.37                                                                              |                                                                                   | 0.16                                                                              | 0.04                                                                              |

Intersection Summary

Area Type: Other

Cycle Length: 105

Actuated Cycle Length: 105

Offset: 31 (30%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 18.1

Intersection LOS: B

Intersection Capacity Utilization 46.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Fairfield Woods Road

|                                                                                            |                                                                                       |                                                                                         |
|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|  Ø2 (R)  |  Ø1 |  Ø4 |
| 54 s                                                                                       | 17 s                                                                                  | 34 s                                                                                    |
|  Ø6 (R) |                                                                                       |                                                                                         |
| 71 s                                                                                       |                                                                                       |                                                                                         |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Improved Concept A Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (vph)    | 79                                                                                | 563                                                                               | 193                                                                               | 126                                                                               | 585                                                                               | 109                                                                               | 207                                                                                 | 204                                                                                 | 133                                                                                 | 187                                                                                 | 196                                                                                 | 55                                                                                  |
| Future Volume (vph)     | 79                                                                                | 563                                                                               | 193                                                                               | 126                                                                               | 585                                                                               | 109                                                                               | 207                                                                                 | 204                                                                                 | 133                                                                                 | 187                                                                                 | 196                                                                                 | 55                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 11                                                                                | 11                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                  | 11                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 200                                                                               |                                                                                   | 325                                                                               | 200                                                                               |                                                                                   | 0                                                                                 | 400                                                                                 |                                                                                     | 75                                                                                  | 170                                                                                 |                                                                                     | 75                                                                                  |
| Storage Lanes           | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                   |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)       | 85                                                                                |                                                                                   |                                                                                   | 50                                                                                |                                                                                   |                                                                                   | 100                                                                                 |                                                                                     |                                                                                     | 100                                                                                 |                                                                                     |                                                                                     |
| Lane Util. Factor       | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.962                                                                             |                                                                                   |                                                                                   | 0.976                                                                             |                                                                                   |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1711                                                                              | 3291                                                                              | 0                                                                                 | 1711                                                                              | 3454                                                                              | 0                                                                                 | 1711                                                                                | 1801                                                                                | 1583                                                                                | 1770                                                                                | 1863                                                                                | 1583                                                                                |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.476                                                                               |                                                                                     |                                                                                     | 0.596                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 1711                                                                              | 3291                                                                              | 0                                                                                 | 1711                                                                              | 3454                                                                              | 0                                                                                 | 857                                                                                 | 1801                                                                                | 1583                                                                                | 1110                                                                                | 1863                                                                                | 1583                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | No                                                                                  |
| Satd. Flow (RTOR)       |                                                                                   | 39                                                                                |                                                                                   |                                                                                   | 18                                                                                |                                                                                   |                                                                                     |                                                                                     | 157                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 628                                                                               |                                                                                   |                                                                                   | 408                                                                               |                                                                                   |                                                                                     | 637                                                                                 |                                                                                     |                                                                                     | 355                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 14.3                                                                              |                                                                                   |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                     | 14.5                                                                                |                                                                                     |                                                                                     | 9.7                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Adj. Flow (vph)         | 87                                                                                | 619                                                                               | 212                                                                               | 135                                                                               | 629                                                                               | 117                                                                               | 216                                                                                 | 213                                                                                 | 139                                                                                 | 195                                                                                 | 204                                                                                 | 57                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 87                                                                                | 831                                                                               | 0                                                                                 | 135                                                                               | 746                                                                               | 0                                                                                 | 216                                                                                 | 213                                                                                 | 139                                                                                 | 195                                                                                 | 204                                                                                 | 57                                                                                  |
| Turn Type               | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | NA                                                                                |                                                                                   | pm+pt                                                                               | NA                                                                                  | Perm                                                                                | pm+pt                                                                               | NA                                                                                  | Perm                                                                                |
| Protected Phases        | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 7                                                                                   | 4                                                                                   |                                                                                     | 3                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   | 8                                                                                   |                                                                                     | 8                                                                                   |
| Detector Phase          | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 7                                                                                   | 4                                                                                   | 4                                                                                   | 3                                                                                   | 8                                                                                   | 8                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 15.0                                                                              |                                                                                   | 5.0                                                                               | 15.0                                                                              |                                                                                   | 5.0                                                                                 | 10.0                                                                                | 10.0                                                                                | 5.0                                                                                 | 10.0                                                                                | 10.0                                                                                |
| Minimum Split (s)       | 9.7                                                                               | 21.6                                                                              |                                                                                   | 9.7                                                                               | 21.6                                                                              |                                                                                   | 9.3                                                                                 | 16.8                                                                                | 16.8                                                                                | 9.3                                                                                 | 16.8                                                                                | 16.8                                                                                |
| Total Split (s)         | 11.8                                                                              | 33.8                                                                              |                                                                                   | 14.4                                                                              | 36.4                                                                              |                                                                                   | 13.7                                                                                | 21.7                                                                                | 21.7                                                                                | 12.1                                                                                | 20.1                                                                                | 20.1                                                                                |
| Total Split (%)         | 10.3%                                                                             | 29.4%                                                                             |                                                                                   | 12.5%                                                                             | 31.7%                                                                             |                                                                                   | 11.9%                                                                               | 18.9%                                                                               | 18.9%                                                                               | 10.5%                                                                               | 17.5%                                                                               | 17.5%                                                                               |
| Yellow Time (s)         | 3.0                                                                               | 4.1                                                                               |                                                                                   | 3.0                                                                               | 4.1                                                                               |                                                                                   | 3.3                                                                                 | 4.4                                                                                 | 4.4                                                                                 | 3.3                                                                                 | 4.4                                                                                 | 4.4                                                                                 |
| All-Red Time (s)        | 1.7                                                                               | 2.5                                                                               |                                                                                   | 1.7                                                                               | 2.5                                                                               |                                                                                   | 1.0                                                                                 | 2.4                                                                                 | 2.4                                                                                 | 1.0                                                                                 | 2.4                                                                                 | 2.4                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 4.7                                                                               | 6.6                                                                               |                                                                                   | 4.7                                                                               | 6.6                                                                               |                                                                                   | 4.3                                                                                 | 6.8                                                                                 | 6.8                                                                                 | 4.3                                                                                 | 6.8                                                                                 | 6.8                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode             | None                                                                              | Min                                                                               |                                                                                   | None                                                                              | Min                                                                               |                                                                                   | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Act Effct Green (s)     | 7.1                                                                               | 27.2                                                                              |                                                                                   | 9.7                                                                               | 29.8                                                                              |                                                                                   | 26.6                                                                                | 14.7                                                                                | 14.7                                                                                | 23.4                                                                                | 13.1                                                                                | 13.1                                                                                |
| Actuated g/C Ratio      | 0.09                                                                              | 0.33                                                                              |                                                                                   | 0.12                                                                              | 0.36                                                                              |                                                                                   | 0.33                                                                                | 0.18                                                                                | 0.18                                                                                | 0.29                                                                                | 0.16                                                                                | 0.16                                                                                |
| v/c Ratio               | 0.59                                                                              | 0.74                                                                              |                                                                                   | 0.67                                                                              | 0.59                                                                              |                                                                                   | 0.57                                                                                | 0.66                                                                                | 0.34                                                                                | 0.51                                                                                | 0.68                                                                                | 0.22                                                                                |
| Control Delay           | 53.5                                                                              | 27.9                                                                              |                                                                                   | 52.3                                                                              | 22.9                                                                              |                                                                                   | 26.5                                                                                | 42.1                                                                                | 6.5                                                                                 | 25.2                                                                                | 45.4                                                                                | 32.5                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 53.5                                                                              | 27.9                                                                              |                                                                                   | 52.3                                                                              | 22.9                                                                              |                                                                                   | 26.5                                                                                | 42.1                                                                                | 6.5                                                                                 | 25.2                                                                                | 45.4                                                                                | 32.5                                                                                |
| LOS                     | D                                                                                 | C                                                                                 |                                                                                   | D                                                                                 | C                                                                                 |                                                                                   | C                                                                                   | D                                                                                   | A                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   |
| Approach Delay          |                                                                                   | 30.3                                                                              |                                                                                   |                                                                                   | 27.4                                                                              |                                                                                   |                                                                                     | 27.4                                                                                |                                                                                     |                                                                                     | 35.2                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Queue Length 50th (ft)  | 44                                                                                | 187                                                                               |                                                                                   | 67                                                                                | 156                                                                               |                                                                                   | 80                                                                                  | 102                                                                                 | 0                                                                                   | 71                                                                                  | 100                                                                                 | 26                                                                                  |



# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Improved Concept A Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |      |
|-------------------------|------|
| Lane Group              | Ø9   |
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 33.0 |
| Total Split (s)         | 33.0 |
| Total Split (%)         | 29%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Improved Concept A Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  | #104                                                                              | 256                                                                               |                                                                                   | #146                                                                              | 213                                                                               |                                                                                   | 136                                                                                | #180                                                                                | 38                                                                                  | 122                                                                                 | #187                                                                                | 59                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 548                                                                               |                                                                                   |                                                                                   | 328                                                                               |                                                                                   |                                                                                    | 557                                                                                 |                                                                                     |                                                                                     | 275                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 200                                                                               |                                                                                   |                                                                                   | 200                                                                               |                                                                                   |                                                                                   | 400                                                                                |                                                                                     | 75                                                                                  | 170                                                                                 |                                                                                     | 75                                                                                  |
| Base Capacity (vph)     | 148                                                                               | 1120                                                                              |                                                                                   | 202                                                                               | 1269                                                                              |                                                                                   | 376                                                                                | 328                                                                                 | 416                                                                                 | 381                                                                                 | 303                                                                                 | 257                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.59                                                                              | 0.74                                                                              |                                                                                   | 0.67                                                                              | 0.59                                                                              |                                                                                   | 0.57                                                                               | 0.65                                                                                | 0.33                                                                                | 0.51                                                                                | 0.67                                                                                | 0.22                                                                                |

## Intersection Summary

Area Type: Other

Cycle Length: 115

Actuated Cycle Length: 81.8

Natural Cycle: 115

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 29.6

Intersection LOS: C

Intersection Capacity Utilization 69.2%

ICU Level of Service C

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)

|                                                                                        |                                                                                        |                                                                                        |                                                                                          |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø9 |  Ø3 |  Ø4 |
| 14.4 s                                                                                 | 33.8 s                                                                                 | 33 s                                                                                   | 12.1 s                                                                                   | 21.7 s                                                                                   |
|  Ø5 |  Ø6 |                                                                                        |  Ø7 |  Ø8 |
| 11.8 s                                                                                 | 36.4 s                                                                                 |                                                                                        | 13.7 s                                                                                   | 20.1 s                                                                                   |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø9 |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & 2040-50 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |                                                                                       |  |  |                                                                                       |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                                                                                                                    | EBR                                                                               | WBL                                                                               | WBT                                                                                                                                                                    | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  | <br> |                                                                                   |  | <br> |                                                                                   |                                                                                    |                                                                                     |  |                                                                                     |                                                                                     |  |
| Traffic Volume (vph)    | 72                                                                                | 713                                                                                                                                                                    | 32                                                                                | 73                                                                                | 812                                                                                                                                                                    | 81                                                                                | 0                                                                                  | 0                                                                                   | 257                                                                                 | 0                                                                                   | 0                                                                                   | 33                                                                                  |
| Future Volume (vph)     | 72                                                                                | 713                                                                                                                                                                    | 32                                                                                | 73                                                                                | 812                                                                                                                                                                    | 81                                                                                | 0                                                                                  | 0                                                                                   | 257                                                                                 | 0                                                                                   | 0                                                                                   | 33                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                                                                                                                   | 1900                                                                              | 1900                                                                              | 1900                                                                                                                                                                   | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                                                                                                     | 12                                                                                | 12                                                                                | 11                                                                                                                                                                     | 12                                                                                | 12                                                                                 | 13                                                                                  | 13                                                                                  | 12                                                                                  | 13                                                                                  | 13                                                                                  |
| Storage Length (ft)     | 65                                                                                |                                                                                                                                                                        | 0                                                                                 | 100                                                                               |                                                                                                                                                                        | 0                                                                                 | 0                                                                                  |                                                                                     | 25                                                                                  | 0                                                                                   |                                                                                     | 25                                                                                  |
| Storage Lanes           | 1                                                                                 |                                                                                                                                                                        | 0                                                                                 | 1                                                                                 |                                                                                                                                                                        | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 50                                                                                |                                                                                                                                                                        |                                                                                   | 50                                                                                |                                                                                                                                                                        |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 1.00                                                                              | 0.95                                                                                                                                                                   | 0.95                                                                              | 1.00                                                                              | 1.00                                                                                                                                                                   | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.994                                                                                                                                                                  |                                                                                   |                                                                                   | 0.986                                                                                                                                                                  |                                                                                   |                                                                                    |                                                                                     | 0.865                                                                               |                                                                                     |                                                                                     | 0.865                                                                               |
| Flt Protected           | 0.950                                                                             |                                                                                                                                                                        |                                                                                   | 0.950                                                                             |                                                                                                                                                                        |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1752                                                                              | 3368                                                                                                                                                                   | 0                                                                                 | 1752                                                                              | 1758                                                                                                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 1649                                                                                | 0                                                                                   | 0                                                                                   | 1649                                                                                |
| Flt Permitted           | 0.950                                                                             |                                                                                                                                                                        |                                                                                   | 0.950                                                                             |                                                                                                                                                                        |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 1752                                                                              | 3368                                                                                                                                                                   | 0                                                                                 | 1752                                                                              | 1758                                                                                                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 1649                                                                                | 0                                                                                   | 0                                                                                   | 1649                                                                                |
| Link Speed (mph)        |                                                                                   | 30                                                                                                                                                                     |                                                                                   |                                                                                   | 30                                                                                                                                                                     |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 401                                                                                                                                                                    |                                                                                   |                                                                                   | 502                                                                                                                                                                    |                                                                                   |                                                                                    | 114                                                                                 |                                                                                     |                                                                                     | 133                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.1                                                                                                                                                                    |                                                                                   |                                                                                   | 11.4                                                                                                                                                                   |                                                                                   |                                                                                    | 3.1                                                                                 |                                                                                     |                                                                                     | 3.6                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.91                                                                              | 0.91                                                                                                                                                                   | 0.91                                                                              | 0.97                                                                              | 0.97                                                                                                                                                                   | 0.97                                                                              | 0.95                                                                               | 0.95                                                                                | 0.95                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                |
| Heavy Vehicles (%)      | 3%                                                                                | 3%                                                                                                                                                                     | 3%                                                                                | 3%                                                                                | 3%                                                                                                                                                                     | 3%                                                                                | 3%                                                                                 | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  |
| Adj. Flow (vph)         | 79                                                                                | 784                                                                                                                                                                    | 35                                                                                | 75                                                                                | 837                                                                                                                                                                    | 84                                                                                | 0                                                                                  | 0                                                                                   | 271                                                                                 | 0                                                                                   | 0                                                                                   | 38                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                                                                                                        |                                                                                   |                                                                                   |                                                                                                                                                                        |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 79                                                                                | 819                                                                                                                                                                    | 0                                                                                 | 75                                                                                | 921                                                                                                                                                                    | 0                                                                                 | 0                                                                                  | 0                                                                                   | 271                                                                                 | 0                                                                                   | 0                                                                                   | 38                                                                                  |
| Sign Control            |                                                                                   | Free                                                                                                                                                                   |                                                                                   |                                                                                   | Free                                                                                                                                                                   |                                                                                   |                                                                                    | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 58.3%

ICU Level of Service B

Analysis Period (min) 15

106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & 2040-50 (Black Rock Turnpike)  
 HCM 2010 TWSC

Timing Plan: Weekday Midday P

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 3    |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      | ↰    | ↱↰   |      | ↰    | ↱    |      |      |      | ↱    |      |      | ↱    |
| Traffic Vol, veh/h       | 72   | 713  | 32   | 73   | 812  | 81   | 0    | 0    | 257  | 0    | 0    | 33   |
| Future Vol, veh/h        | 72   | 713  | 32   | 73   | 812  | 81   | 0    | 0    | 257  | 0    | 0    | 33   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | 65   | -    | -    | 100  | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 91   | 91   | 91   | 97   | 97   | 97   | 95   | 95   | 95   | 88   | 88   | 88   |
| Heavy Vehicles, %        | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    |
| Mvmt Flow                | 79   | 784  | 35   | 75   | 837  | 84   | 0    | 0    | 271  | 0    | 0    | 38   |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |   |        | Minor2 |   |        |
|----------------------|--------|---|---|--------|---|---|--------|---|--------|--------|---|--------|
| Conflicting Flow All | 921    | 0 | 0 | 819    | 0 | 0 | -      | - | 410    | -      | - | 879    |
| Stage 1              | -      | - | - | -      | - | - | -      | - | -      | -      | - | -      |
| Stage 2              | -      | - | - | -      | - | - | -      | - | -      | -      | - | -      |
| Critical Hdwy        | 4.145  | - | - | 4.145  | - | - | -      | - | 6.945  | -      | - | 6.245  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | -      | - | -      | -      | - | -      |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | -      | - | -      | -      | - | -      |
| Follow-up Hdwy       | 2.2285 | - | - | 2.2285 | - | - | -      | - | 3.3285 | -      | - | 3.3285 |
| Pot Cap-1 Maneuver   | 734    | - | - | 802    | - | - | 0      | 0 | 589    | 0      | 0 | 344    |
| Stage 1              | -      | - | - | -      | - | - | 0      | 0 | -      | 0      | 0 | -      |
| Stage 2              | -      | - | - | -      | - | - | 0      | 0 | -      | 0      | 0 | -      |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | - | -      | -      | - | -      |
| Mov Cap-1 Maneuver   | 734    | - | - | 802    | - | - | -      | - | 589    | -      | - | 344    |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | -      | - | -      | -      | - | -      |
| Stage 1              | -      | - | - | -      | - | - | -      | - | -      | -      | - | -      |
| Stage 2              | -      | - | - | -      | - | - | -      | - | -      | -      | - | -      |

| Approach             | EB  |  |  | WB  |  |  | NB   |  |  | SB   |  |  |
|----------------------|-----|--|--|-----|--|--|------|--|--|------|--|--|
| HCM Control Delay, s | 0.9 |  |  | 0.8 |  |  | 16.2 |  |  | 16.7 |  |  |
| HCM LOS              |     |  |  |     |  |  | C    |  |  | C    |  |  |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 589   | 734   | -   | -   | 802   | -   | -   | 344   |
| HCM Lane V/C Ratio    | 0.459 | 0.108 | -   | -   | 0.094 | -   | -   | 0.109 |
| HCM Control Delay (s) | 16.2  | 10.5  | -   | -   | 10    | -   | -   | 16.7  |
| HCM Lane LOS          | C     | B     | -   | -   | A     | -   | -   | C     |
| HCM 95th %tile Q(veh) | 2.4   | 0.4   | -   | -   | 0.3   | -   | -   | 0.4   |

## 108: Burroughs Road &amp; Route 58 (Black Rock Turnpike)

## 2040 Improved Concept A

## Lanes, Volumes, Timings

Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |                                                                                   |  |  |                                                                                   |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (vph)    | 62                                                                                | 753                                                                               | 12                                                                                | 0                                                                                 | 674                                                                               | 113                                                                               | 14                                                                                | 59                                                                                  | 7                                                                                   | 118                                                                                 | 51                                                                                  | 47                                                                                  |
| Future Volume (vph)     | 62                                                                                | 753                                                                               | 12                                                                                | 0                                                                                 | 674                                                                               | 113                                                                               | 14                                                                                | 59                                                                                  | 7                                                                                   | 118                                                                                 | 51                                                                                  | 47                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 16                                                                                  | 12                                                                                  | 12                                                                                  | 16                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 65                                                                                |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 130                                                                               | 0                                                                                 |                                                                                     | 0                                                                                   | 125                                                                                 |                                                                                     | 0                                                                                   |
| Storage Lanes           | 1                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 1                                                                                 | 0                                                                                 |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 50                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                     |                                                                                     | 50                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   | 0.988                                                                               |                                                                                     |                                                                                     | 0.928                                                                               |                                                                                     |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.991                                                                               |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1736                                                                              | 3349                                                                              | 0                                                                                 | 0                                                                                 | 1766                                                                              | 1553                                                                              | 0                                                                                 | 2027                                                                                | 0                                                                                   | 1736                                                                                | 1921                                                                                | 0                                                                                   |
| Flt Permitted           | 0.302                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.910                                                                               |                                                                                     | 0.692                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 552                                                                               | 3349                                                                              | 0                                                                                 | 0                                                                                 | 1766                                                                              | 1553                                                                              | 0                                                                                 | 1862                                                                                | 0                                                                                   | 1264                                                                                | 1921                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   |                                                                                   | 118                                                                               |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     | 57                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 407                                                                               |                                                                                   |                                                                                   | 390                                                                               |                                                                                   |                                                                                   | 466                                                                                 |                                                                                     |                                                                                     | 265                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                   | 8.9                                                                               |                                                                                   |                                                                                   | 12.7                                                                                |                                                                                     |                                                                                     | 7.2                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.80                                                                              | 0.80                                                                                | 0.80                                                                                | 0.83                                                                                | 0.83                                                                                | 0.83                                                                                |
| Heavy Vehicles (%)      | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  |
| Adj. Flow (vph)         | 72                                                                                | 876                                                                               | 14                                                                                | 0                                                                                 | 702                                                                               | 118                                                                               | 18                                                                                | 74                                                                                  | 9                                                                                   | 142                                                                                 | 61                                                                                  | 57                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 72                                                                                | 890                                                                               | 0                                                                                 | 0                                                                                 | 702                                                                               | 118                                                                               | 0                                                                                 | 101                                                                                 | 0                                                                                   | 142                                                                                 | 118                                                                                 | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   |                                                                                   | NA                                                                                | Perm                                                                              | Perm                                                                              | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 2                                                                                 | 4                                                                                 |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 6                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 | 2                                                                                 | 4                                                                                 | 4                                                                                   |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 15.0                                                                              | 15.0                                                                              |                                                                                   |                                                                                   | 15.0                                                                              | 15.0                                                                              | 9.0                                                                               | 9.0                                                                                 |                                                                                     | 9.0                                                                                 | 9.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 20.6                                                                              | 20.6                                                                              |                                                                                   |                                                                                   | 20.6                                                                              | 20.6                                                                              | 14.4                                                                              | 14.4                                                                                |                                                                                     | 14.4                                                                                | 14.4                                                                                |                                                                                     |
| Total Split (s)         | 39.0                                                                              | 39.0                                                                              |                                                                                   |                                                                                   | 39.0                                                                              | 39.0                                                                              | 16.0                                                                              | 16.0                                                                                |                                                                                     | 16.0                                                                                | 16.0                                                                                |                                                                                     |
| Total Split (%)         | 70.9%                                                                             | 70.9%                                                                             |                                                                                   |                                                                                   | 70.9%                                                                             | 70.9%                                                                             | 29.1%                                                                             | 29.1%                                                                               |                                                                                     | 29.1%                                                                               | 29.1%                                                                               |                                                                                     |
| Yellow Time (s)         | 4.1                                                                               | 4.1                                                                               |                                                                                   |                                                                                   | 4.1                                                                               | 4.1                                                                               | 3.1                                                                               | 3.1                                                                                 |                                                                                     | 3.1                                                                                 | 3.1                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.5                                                                               | 1.5                                                                               |                                                                                   |                                                                                   | 1.5                                                                               | 1.5                                                                               | 2.3                                                                               | 2.3                                                                                 |                                                                                     | 2.3                                                                                 | 2.3                                                                                 |                                                                                     |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     | 5.6                                                                               | 5.6                                                                               |                                                                                   |                                                                                   | 5.6                                                                               | 5.6                                                                               |                                                                                   | 5.4                                                                                 |                                                                                     | 5.4                                                                                 | 5.4                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | Min                                                                               | Min                                                                               |                                                                                   |                                                                                   | Min                                                                               | Min                                                                               | None                                                                              | None                                                                                |                                                                                     | None                                                                                | None                                                                                |                                                                                     |
| Act Effect Green (s)    | 27.5                                                                              | 27.5                                                                              |                                                                                   |                                                                                   | 27.5                                                                              | 27.5                                                                              |                                                                                   | 9.8                                                                                 |                                                                                     | 9.8                                                                                 | 9.8                                                                                 |                                                                                     |
| Actuated g/C Ratio      | 0.63                                                                              | 0.63                                                                              |                                                                                   |                                                                                   | 0.63                                                                              | 0.63                                                                              |                                                                                   | 0.22                                                                                |                                                                                     | 0.22                                                                                | 0.22                                                                                |                                                                                     |
| v/c Ratio               | 0.21                                                                              | 0.42                                                                              |                                                                                   |                                                                                   | 0.63                                                                              | 0.12                                                                              |                                                                                   | 0.24                                                                                |                                                                                     | 0.50                                                                                | 0.25                                                                                |                                                                                     |
| Control Delay           | 7.2                                                                               | 6.5                                                                               |                                                                                   |                                                                                   | 10.4                                                                              | 1.5                                                                               |                                                                                   | 17.2                                                                                |                                                                                     | 25.7                                                                                | 11.8                                                                                |                                                                                     |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Delay             | 7.2                                                                               | 6.5                                                                               |                                                                                   |                                                                                   | 10.4                                                                              | 1.5                                                                               |                                                                                   | 17.2                                                                                |                                                                                     | 25.7                                                                                | 11.8                                                                                |                                                                                     |
| LOS                     | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 | A                                                                                 |                                                                                   | B                                                                                   |                                                                                     | C                                                                                   | B                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 6.5                                                                               |                                                                                   |                                                                                   | 9.1                                                                               |                                                                                   |                                                                                   | 17.2                                                                                |                                                                                     |                                                                                     | 19.4                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |



108: Burroughs Road & Route 58 (Black Rock Turnpike)  
Lanes, Volumes, Timings

2040 Improved Concept A  
Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  | 8                                                                                 | 61                                                                                |                                                                                   |                                                                                   | 113                                                                               | 0                                                                                 |                                                                                    | 18                                                                                  |                                                                                     | 29                                                                                  | 11                                                                                  |                                                                                     |
| Queue Length 95th (ft)  | 24                                                                                | 94                                                                                |                                                                                   |                                                                                   | 223                                                                               | 14                                                                                |                                                                                    | 53                                                                                  |                                                                                     | #86                                                                                 | 47                                                                                  |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 327                                                                               |                                                                                   |                                                                                   | 310                                                                               |                                                                                   |                                                                                    | 386                                                                                 |                                                                                     |                                                                                     | 185                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 65                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 130                                                                               |                                                                                    |                                                                                     |                                                                                     | 125                                                                                 |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 435                                                                               | 2640                                                                              |                                                                                   |                                                                                   | 1391                                                                              | 1249                                                                              |                                                                                    | 471                                                                                 |                                                                                     | 316                                                                                 | 523                                                                                 |                                                                                     |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       | 0.17                                                                              | 0.34                                                                              |                                                                                   |                                                                                   | 0.50                                                                              | 0.09                                                                              |                                                                                    | 0.21                                                                                |                                                                                     | 0.45                                                                                | 0.23                                                                                |                                                                                     |

Intersection Summary

Area Type: Other

Cycle Length: 55

Actuated Cycle Length: 43.7

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 9.6

Intersection LOS: A

Intersection Capacity Utilization 73.9%

ICU Level of Service D

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)

|                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø2 |  Ø4 |
| 39 s                                                                                   | 16 s                                                                                     |
|  Ø6 |  Ø8 |
| 39 s                                                                                   | 16 s                                                                                     |

201: Tunxis Hill Road & Route 58 (Tunxis Hill Cutoff)  
Lanes, Volumes, Timings

2040 Improved Concept A  
Timing Plan: Weekday Midday P

|                         | →     | ↘    | ↙    | ←     | ↖     | ↗     |
|-------------------------|-------|------|------|-------|-------|-------|
| Lane Group              | EBT   | EBR  | WBL  | WBT   | NBL   | NBR   |
| Lane Configurations     | ↑↑    |      |      | ↑     | ↑     | ↑     |
| Traffic Volume (vph)    | 440   | 11   | 36   | 411   | 3     | 61    |
| Future Volume (vph)     | 440   | 11   | 36   | 411   | 3     | 61    |
| Ideal Flow (vphpl)      | 1900  | 1900 | 1900 | 1900  | 1900  | 1900  |
| Lane Width (ft)         | 11    | 12   | 12   | 11    | 10    | 10    |
| Storage Length (ft)     |       | 0    | 0    |       | 0     | 50    |
| Storage Lanes           |       | 0    | 0    |       | 1     | 1     |
| Taper Length (ft)       |       |      | 25   |       | 25    |       |
| Lane Util. Factor       | 0.95  | 0.95 | 1.00 | 1.00  | 1.00  | 1.00  |
| Frt                     | 0.996 |      |      |       |       | 0.850 |
| Flt Protected           |       |      |      | 0.996 | 0.950 |       |
| Satd. Flow (prot)       | 3374  | 0    | 0    | 1776  | 1636  | 1463  |
| Flt Permitted           |       |      |      | 0.996 | 0.950 |       |
| Satd. Flow (perm)       | 3374  | 0    | 0    | 1776  | 1636  | 1463  |
| Link Speed (mph)        | 30    |      |      | 30    | 25    |       |
| Link Distance (ft)      | 1095  |      |      | 214   | 782   |       |
| Travel Time (s)         | 24.9  |      |      | 4.9   | 21.3  |       |
| Peak Hour Factor        | 0.85  | 0.85 | 0.86 | 0.86  | 0.88  | 0.88  |
| Heavy Vehicles (%)      | 3%    | 3%   | 3%   | 3%    | 3%    | 3%    |
| Adj. Flow (vph)         | 518   | 13   | 42   | 478   | 3     | 69    |
| Shared Lane Traffic (%) |       |      |      |       |       |       |
| Lane Group Flow (vph)   | 531   | 0    | 0    | 520   | 3     | 69    |
| Sign Control            | Free  |      |      | Free  | Stop  |       |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 49.5% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↑↑   |      |      | ↑    | ↑    | ↑    |
| Traffic Vol, veh/h       | 440  | 11   | 36   | 411  | 3    | 61   |
| Future Vol, veh/h        | 440  | 11   | 36   | 411  | 3    | 61   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | 0    | 50   |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 85   | 85   | 86   | 86   | 88   | 88   |
| Heavy Vehicles, %        | 3    | 3    | 3    | 3    | 3    | 3    |
| Mvmt Flow                | 518  | 13   | 42   | 478  | 3    | 69   |

| Major/Minor          | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0      | 0      | 531    |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Critical Hdwy        | -      | -      | 4.145  |
| Critical Hdwy Stg 1  | -      | -      | -      |
| Critical Hdwy Stg 2  | -      | -      | -      |
| Follow-up Hdwy       | -      | -      | 2.2285 |
| Pot Cap-1 Maneuver   | -      | -      | 1028   |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | -      | -      | 1028   |
| Mov Cap-2 Maneuver   | -      | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |

| Approach             | EB | WB  | NB |
|----------------------|----|-----|----|
| HCM Control Delay, s | 0  | 0.7 | 11 |
| HCM LOS              |    |     | B  |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | 211   | 730   | -   | -   | 1028  | -   |
| HCM Lane V/C Ratio    | 0.016 | 0.095 | -   | -   | 0.041 | -   |
| HCM Control Delay (s) | 22.3  | 10.4  | -   | -   | 8.7   | 0   |
| HCM Lane LOS          | C     | B     | -   | -   | A     | A   |
| HCM 95th %tile Q(veh) | 0     | 0.3   | -   | -   | 0.1   | -   |

202: Route 732 (Black Rock Turnpike) & Judd Street  
Lanes, Volumes, Timings

2040 Improved Concept A  
Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations     |  |                                                                                   |  |  |  |                                                                                   |
| Traffic Volume (vph)    | 21                                                                                | 65                                                                                | 53                                                                                | 406                                                                               | 484                                                                               | 35                                                                                |
| Future Volume (vph)     | 21                                                                                | 65                                                                                | 53                                                                                | 406                                                                               | 484                                                                               | 35                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Storage Length (ft)     | 0                                                                                 | 0                                                                                 | 25                                                                                |                                                                                   |                                                                                   | 0                                                                                 |
| Storage Lanes           | 1                                                                                 | 0                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.898                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.991                                                                             |                                                                                   |
| Flt Protected           | 0.988                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1820                                                                              | 0                                                                                 | 1719                                                                              | 1810                                                                              | 1793                                                                              | 0                                                                                 |
| Flt Permitted           | 0.988                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1820                                                                              | 0                                                                                 | 1719                                                                              | 1810                                                                              | 1793                                                                              | 0                                                                                 |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 586                                                                               |                                                                                   |                                                                                   | 395                                                                               | 218                                                                               |                                                                                   |
| Travel Time (s)         | 16.0                                                                              |                                                                                   |                                                                                   | 9.0                                                                               | 5.0                                                                               |                                                                                   |
| Peak Hour Factor        | 0.90                                                                              | 0.90                                                                              | 0.94                                                                              | 0.94                                                                              | 0.87                                                                              | 0.87                                                                              |
| Heavy Vehicles (%)      | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                |
| Adj. Flow (vph)         | 23                                                                                | 72                                                                                | 56                                                                                | 432                                                                               | 556                                                                               | 40                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 95                                                                                | 0                                                                                 | 56                                                                                | 432                                                                               | 596                                                                               | 0                                                                                 |
| Sign Control            | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 46.1% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1.8

| Movement                 | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |
|--------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |  |      |  |  |  |      |
| Traffic Vol, veh/h       | 21                                                                                | 65   | 53                                                                                | 406                                                                               | 484                                                                               | 35   |
| Future Vol, veh/h        | 21                                                                                | 65   | 53                                                                                | 406                                                                               | 484                                                                               | 35   |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    |
| Sign Control             | Stop                                                                              | Stop | Free                                                                              | Free                                                                              | Free                                                                              | Free |
| RT Channelized           | -                                                                                 | None | -                                                                                 | None                                                                              | -                                                                                 | None |
| Storage Length           | 0                                                                                 | -    | 25                                                                                | -                                                                                 | -                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 90                                                                                | 90   | 94                                                                                | 94                                                                                | 87                                                                                | 87   |
| Heavy Vehicles, %        | 5                                                                                 | 5    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5    |
| Mvmt Flow                | 23                                                                                | 72   | 56                                                                                | 432                                                                               | 556                                                                               | 40   |

| Major/Minor          | Minor2 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 1120   | 576    | 596    |
| Stage 1              | 576    | -      | -      |
| Stage 2              | 544    | -      | -      |
| Critical Hdwy        | 6.45   | 6.25   | 4.15   |
| Critical Hdwy Stg 1  | 5.45   | -      | -      |
| Critical Hdwy Stg 2  | 5.45   | -      | -      |
| Follow-up Hdwy       | 3.545  | 3.345  | 2.245  |
| Pot Cap-1 Maneuver   | 225    | 511    | 966    |
| Stage 1              | 556    | -      | -      |
| Stage 2              | 576    | -      | -      |
| Platoon blocked, %   |        |        |        |
| Mov Cap-1 Maneuver   | 212    | 511    | 966    |
| Mov Cap-2 Maneuver   | 212    | -      | -      |
| Stage 1              | 524    | -      | -      |
| Stage 2              | 576    | -      | -      |

| Approach             | EB   | NB | SB |
|----------------------|------|----|----|
| HCM Control Delay, s | 17.6 | 1  | 0  |
| HCM LOS              | C    |    |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 966   | -   | 380   | -   | -   |
| HCM Lane V/C Ratio    | 0.058 | -   | 0.251 | -   | -   |
| HCM Control Delay (s) | 9     | -   | 17.6  | -   | -   |
| HCM Lane LOS          | A     | -   | C     | -   | -   |
| HCM 95th %tile Q(veh) | 0.2   | -   | 1     | -   | -   |

203: Moritz Place & Route 58 (Black Rock Turnpike)  
Lanes, Volumes, Timings

2040 Improved Concept A  
Timing Plan: Weekday Midday P

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |                                                                                   |  |
| Traffic Volume (vph)    | 824                                                                               | 6                                                                                 | 0                                                                                 | 756                                                                               | 0                                                                                 | 9                                                                                 |
| Future Volume (vph)     | 824                                                                               | 6                                                                                 | 0                                                                                 | 756                                                                               | 0                                                                                 | 9                                                                                 |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.999                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.865                                                                             |
| Flt Protected           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1825                                                                              | 0                                                                                 | 0                                                                                 | 1827                                                                              | 0                                                                                 | 1580                                                                              |
| Flt Permitted           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1825                                                                              | 0                                                                                 | 0                                                                                 | 1827                                                                              | 0                                                                                 | 1580                                                                              |
| Link Speed (mph)        | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 187                                                                               |                                                                                   |                                                                                   | 131                                                                               | 186                                                                               |                                                                                   |
| Travel Time (s)         | 4.3                                                                               |                                                                                   |                                                                                   | 3.0                                                                               | 4.2                                                                               |                                                                                   |
| Peak Hour Factor        | 0.90                                                                              | 0.90                                                                              | 0.96                                                                              | 0.96                                                                              | 0.80                                                                              | 0.80                                                                              |
| Heavy Vehicles (%)      | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                |
| Adj. Flow (vph)         | 916                                                                               | 7                                                                                 | 0                                                                                 | 788                                                                               | 0                                                                                 | 11                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 923                                                                               | 0                                                                                 | 0                                                                                 | 788                                                                               | 0                                                                                 | 11                                                                                |
| Sign Control            | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 53.7%

ICU Level of Service A

Analysis Period (min) 15



Intersection

Int Delay, s/veh 0.1

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↔    |      |      | ↑    |      | ↗    |
| Traffic Vol, veh/h       | 824  | 6    | 0    | 756  | 0    | 9    |
| Future Vol, veh/h        | 824  | 6    | 0    | 756  | 0    | 9    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | 0    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 90   | 90   | 96   | 96   | 80   | 80   |
| Heavy Vehicles, %        | 4    | 4    | 4    | 4    | 4    | 4    |
| Mvmt Flow                | 916  | 7    | 0    | 788  | 0    | 11   |

| Major/Minor          | Major1 | Major2 | Minor1      |
|----------------------|--------|--------|-------------|
| Conflicting Flow All | 0      | 0      | - - - 920   |
| Stage 1              | -      | -      | - - -       |
| Stage 2              | -      | -      | - - -       |
| Critical Hdwy        | -      | -      | - - - 6.24  |
| Critical Hdwy Stg 1  | -      | -      | - - -       |
| Critical Hdwy Stg 2  | -      | -      | - - -       |
| Follow-up Hdwy       | -      | -      | - - - 3.336 |
| Pot Cap-1 Maneuver   | -      | -      | 0 - 0 326   |
| Stage 1              | -      | -      | 0 - 0 -     |
| Stage 2              | -      | -      | 0 - 0 -     |
| Platoon blocked, %   | -      | -      | -           |
| Mov Cap-1 Maneuver   | -      | -      | - - - 326   |
| Mov Cap-2 Maneuver   | -      | -      | - - -       |
| Stage 1              | -      | -      | - - -       |
| Stage 2              | -      | -      | - - -       |

| Approach             | EB | WB | NB   |
|----------------------|----|----|------|
| HCM Control Delay, s | 0  | 0  | 16.4 |
| HCM LOS              |    |    | C    |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h)      | 326   | -   | -   | -   |
| HCM Lane V/C Ratio    | 0.035 | -   | -   | -   |
| HCM Control Delay (s) | 16.4  | -   | -   | -   |
| HCM Lane LOS          | C     | -   | -   | -   |
| HCM 95th %tile Q(veh) | 0.1   | -   | -   | -   |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Talbot Drive Concept A Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 10                                                                                | 0                                                                                 | 1                                                                                 | 54                                                                                | 4                                                                                 | 57                                                                                | 4                                                                                  | 802                                                                                 | 112                                                                                 | 128                                                                                 | 975                                                                                 | 5                                                                                   |
| Future Volume (vph)     | 10                                                                                | 0                                                                                 | 1                                                                                 | 54                                                                                | 4                                                                                 | 57                                                                                | 4                                                                                  | 802                                                                                 | 112                                                                                 | 128                                                                                 | 975                                                                                 | 5                                                                                   |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                 | 13                                                                                  | 12                                                                                  | 12                                                                                  | 13                                                                                  | 12                                                                                  |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.990                                                                             |                                                                                   |                                                                                   | 0.932                                                                             |                                                                                   |                                                                                    | 0.983                                                                               |                                                                                     |                                                                                     | 0.999                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.956                                                                             |                                                                                   |                                                                                   | 0.977                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.994                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 1998                                                                              | 0                                                                                 | 0                                                                                 | 1922                                                                              | 0                                                                                 | 0                                                                                  | 1892                                                                                | 0                                                                                   | 0                                                                                   | 1911                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.650                                                                             |                                                                                   |                                                                                   | 0.844                                                                             |                                                                                   |                                                                                    | 0.996                                                                               |                                                                                     |                                                                                     | 0.776                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 1359                                                                              | 0                                                                                 | 0                                                                                 | 1661                                                                              | 0                                                                                 | 0                                                                                  | 1885                                                                                | 0                                                                                   | 0                                                                                   | 1492                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 26                                                                                |                                                                                   |                                                                                   | 37                                                                                |                                                                                   |                                                                                    | 22                                                                                  |                                                                                     |                                                                                     | 1                                                                                   |                                                                                     |
| Link Speed (mph)        |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 35                                                                                  |                                                                                     |                                                                                     | 35                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 378                                                                               |                                                                                   |                                                                                   | 442                                                                               |                                                                                   |                                                                                    | 1898                                                                                |                                                                                     |                                                                                     | 522                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 10.3                                                                              |                                                                                   |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                    | 37.0                                                                                |                                                                                     |                                                                                     | 10.2                                                                                |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                |
| Adj. Flow (vph)         | 13                                                                                | 0                                                                                 | 1                                                                                 | 59                                                                                | 4                                                                                 | 63                                                                                | 4                                                                                  | 872                                                                                 | 122                                                                                 | 147                                                                                 | 1121                                                                                | 6                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 14                                                                                | 0                                                                                 | 0                                                                                 | 126                                                                               | 0                                                                                 | 0                                                                                  | 998                                                                                 | 0                                                                                   | 0                                                                                   | 1274                                                                                | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                    | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Permitted Phases        | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   | 2                                                                                  |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 4                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |                                                                                   | 2                                                                                  | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 15.0                                                                               | 15.0                                                                                |                                                                                     | 15.0                                                                                | 15.0                                                                                |                                                                                     |
| Minimum Split (s)       | 11.7                                                                              | 11.7                                                                              |                                                                                   | 11.7                                                                              | 11.7                                                                              |                                                                                   | 20.6                                                                               | 20.6                                                                                |                                                                                     | 20.6                                                                                | 20.6                                                                                |                                                                                     |
| Total Split (s)         | 17.0                                                                              | 17.0                                                                              |                                                                                   | 17.0                                                                              | 17.0                                                                              |                                                                                   | 93.0                                                                               | 93.0                                                                                |                                                                                     | 93.0                                                                                | 93.0                                                                                |                                                                                     |
| Total Split (%)         | 15.5%                                                                             | 15.5%                                                                             |                                                                                   | 15.5%                                                                             | 15.5%                                                                             |                                                                                   | 84.5%                                                                              | 84.5%                                                                               |                                                                                     | 84.5%                                                                               | 84.5%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.3                                                                               | 3.3                                                                               |                                                                                   | 3.3                                                                               | 3.3                                                                               |                                                                                   | 4.0                                                                                | 4.0                                                                                 |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.4                                                                               | 1.4                                                                               |                                                                                   | 1.4                                                                               | 1.4                                                                               |                                                                                   | 1.6                                                                                | 1.6                                                                                 |                                                                                     | 1.6                                                                                 | 1.6                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                    | 5.6                                                                                 |                                                                                     |                                                                                     | 5.6                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              |                                                                                   | C-Min                                                                              | C-Min                                                                               |                                                                                     | C-Min                                                                               | C-Min                                                                               |                                                                                     |
| Act Effct Green (s)     |                                                                                   | 10.1                                                                              |                                                                                   |                                                                                   | 10.1                                                                              |                                                                                   |                                                                                    | 89.6                                                                                |                                                                                     |                                                                                     | 89.6                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.09                                                                              |                                                                                   |                                                                                   | 0.09                                                                              |                                                                                   |                                                                                    | 0.81                                                                                |                                                                                     |                                                                                     | 0.81                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.09                                                                              |                                                                                   |                                                                                   | 0.68                                                                              |                                                                                   |                                                                                    | 0.65                                                                                |                                                                                     |                                                                                     | 1.05                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 9.2                                                                               |                                                                                   |                                                                                   | 52.0                                                                              |                                                                                   |                                                                                    | 8.7                                                                                 |                                                                                     |                                                                                     | 52.9                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 9.2                                                                               |                                                                                   |                                                                                   | 52.0                                                                              |                                                                                   |                                                                                    | 8.7                                                                                 |                                                                                     |                                                                                     | 52.9                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 9.2                                                                               |                                                                                   |                                                                                   | 52.0                                                                              |                                                                                   |                                                                                    | 8.7                                                                                 |                                                                                     |                                                                                     | 52.9                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 61                                                                                |                                                                                   |                                                                                    | 215                                                                                 |                                                                                     |                                                                                     | ~988                                                                                |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   | 123                                                                               |                                                                                   |                                                                                    | 715                                                                                 |                                                                                     |                                                                                     | #1196                                                                               |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 298                                                                               |                                                                                   |                                                                                   | 362                                                                               |                                                                                   |                                                                                    | 1818                                                                                |                                                                                     |                                                                                     | 442                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive Concept A Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Base Capacity (vph)    |                                                                                   | 175                                                                               |                                                                                   |                                                                                   | 218                                                                               |                                                                                   |                                                                                    | 1539                                                                                |                                                                                     |                                                                                     | 1215                                                                                |                                                                                     |
| Starvation Cap Reductn |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   | 0.08                                                                              |                                                                                   |                                                                                   | 0.58                                                                              |                                                                                   |                                                                                    | 0.65                                                                                |                                                                                     |                                                                                     | 1.05                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 67 (61%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 34.3

Intersection LOS: C

Intersection Capacity Utilization 127.4%

ICU Level of Service H

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

|                                                                                            |                                                                                          |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø2 (R) |  Ø4 |
| 93 s                                                                                       | 17 s                                                                                     |
|  Ø6 (R) |  Ø8 |
| 93 s                                                                                       | 17 s                                                                                     |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

## Lanes, Volumes, Timings

2040 Improved Concept A

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |      |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3   |
| Lane Configurations     |  |  |  |  |  |  |      |
| Traffic Volume (vph)    | 178                                                                               | 344                                                                               | 135                                                                               | 808                                                                               | 946                                                                               | 88                                                                                |      |
| Future Volume (vph)     | 178                                                                               | 344                                                                               | 135                                                                               | 808                                                                               | 946                                                                               | 88                                                                                |      |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |      |
| Lane Width (ft)         | 10                                                                                | 10                                                                                | 11                                                                                | 11                                                                                | 12                                                                                | 12                                                                                |      |
| Storage Length (ft)     | 0                                                                                 | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   | 50                                                                                |      |
| Storage Lanes           | 1                                                                                 | 1                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 1                                                                                 |      |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |      |
| Frt                     |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |      |
| Flt Protected           | 0.950                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |      |
| Satd. Flow (prot)       | 1652                                                                              | 1478                                                                              | 1711                                                                              | 3421                                                                              | 1863                                                                              | 1583                                                                              |      |
| Flt Permitted           | 0.950                                                                             |                                                                                   | 0.065                                                                             |                                                                                   |                                                                                   |                                                                                   |      |
| Satd. Flow (perm)       | 1652                                                                              | 1478                                                                              | 117                                                                               | 3421                                                                              | 1863                                                                              | 1583                                                                              |      |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |      |
| Satd. Flow (RTOR)       |                                                                                   | 215                                                                               |                                                                                   |                                                                                   |                                                                                   | 18                                                                                |      |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 35                                                                                |                                                                                   |      |
| Link Distance (ft)      | 445                                                                               |                                                                                   |                                                                                   | 510                                                                               | 341                                                                               |                                                                                   |      |
| Travel Time (s)         | 12.1                                                                              |                                                                                   |                                                                                   | 11.6                                                                              | 6.6                                                                               |                                                                                   |      |
| Peak Hour Factor        | 0.90                                                                              | 0.90                                                                              | 0.88                                                                              | 0.88                                                                              | 0.95                                                                              | 0.95                                                                              |      |
| Adj. Flow (vph)         | 198                                                                               | 382                                                                               | 153                                                                               | 918                                                                               | 996                                                                               | 93                                                                                |      |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Group Flow (vph)   | 198                                                                               | 382                                                                               | 153                                                                               | 918                                                                               | 996                                                                               | 93                                                                                |      |
| Turn Type               | Prot                                                                              | Perm                                                                              | pm+pt                                                                             | NA                                                                                | NA                                                                                | Perm                                                                              |      |
| Protected Phases        | 4                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 | 2                                                                                 |                                                                                   | 3    |
| Permitted Phases        |                                                                                   | 4                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |      |
| Detector Phase          | 4                                                                                 | 4                                                                                 | 1                                                                                 | 6                                                                                 | 2                                                                                 | 2                                                                                 |      |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               | 5.0                                                                               | 15.0                                                                              | 15.0                                                                              | 15.0                                                                              | 7.0  |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              | 9.2                                                                               | 21.9                                                                              | 21.9                                                                              | 21.9                                                                              | 22.0 |
| Total Split (s)         | 17.0                                                                              | 17.0                                                                              | 10.2                                                                              | 71.0                                                                              | 60.8                                                                              | 60.8                                                                              | 22.0 |
| Total Split (%)         | 15.5%                                                                             | 15.5%                                                                             | 9.3%                                                                              | 64.5%                                                                             | 55.3%                                                                             | 55.3%                                                                             | 20%  |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               | 3.2                                                                               | 4.9                                                                               | 4.9                                                                               | 4.9                                                                               | 4.0  |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 0.0  |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |      |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               | 4.2                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               |      |
| Lead/Lag                | Lag                                                                               | Lag                                                                               | Lead                                                                              |                                                                                   | Lag                                                                               | Lag                                                                               | Lead |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               | Yes  |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | C-Min                                                                             | C-Min                                                                             | C-Min                                                                             | None |
| Act Effect Green (s)    | 26.4                                                                              | 26.4                                                                              | 75.4                                                                              | 72.7                                                                              | 57.2                                                                              | 57.2                                                                              |      |
| Actuated g/C Ratio      | 0.24                                                                              | 0.24                                                                              | 0.69                                                                              | 0.66                                                                              | 0.52                                                                              | 0.52                                                                              |      |
| v/c Ratio               | 0.50                                                                              | 0.74                                                                              | 0.63                                                                              | 0.41                                                                              | 1.03                                                                              | 0.11                                                                              |      |
| Control Delay           | 40.7                                                                              | 25.7                                                                              | 30.4                                                                              | 10.0                                                                              | 38.7                                                                              | 6.1                                                                               |      |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |      |
| Total Delay             | 40.7                                                                              | 25.7                                                                              | 30.4                                                                              | 10.0                                                                              | 38.7                                                                              | 6.1                                                                               |      |
| LOS                     | D                                                                                 | C                                                                                 | C                                                                                 | B                                                                                 | D                                                                                 | A                                                                                 |      |
| Approach Delay          | 30.8                                                                              |                                                                                   |                                                                                   | 12.9                                                                              | 35.9                                                                              |                                                                                   |      |
| Approach LOS            | C                                                                                 |                                                                                   |                                                                                   | B                                                                                 | D                                                                                 |                                                                                   |      |
| Queue Length 50th (ft)  | 123                                                                               | 111                                                                               | 56                                                                                | 96                                                                                | -691                                                                              | 17                                                                                |      |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive Lanes, Volumes, Timings

2040 Improved Concept A  
Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |    |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3 |
| Queue Length 95th (ft)  | 187                                                                               | 218                                                                               | 110                                                                               | 305                                                                               | m#742                                                                             | m19                                                                               |    |
| Internal Link Dist (ft) | 365                                                                               |                                                                                   |                                                                                   | 430                                                                               | 261                                                                               |                                                                                   |    |
| Turn Bay Length (ft)    |                                                                                   | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   | 50                                                                                |    |
| Base Capacity (vph)     | 396                                                                               | 518                                                                               | 243                                                                               | 2261                                                                              | 968                                                                               | 832                                                                               |    |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |    |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |    |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |    |
| Reduced v/c Ratio       | 0.50                                                                              | 0.74                                                                              | 0.63                                                                              | 0.41                                                                              | 1.03                                                                              | 0.11                                                                              |    |

## Intersection Summary

Area Type: Other  
Cycle Length: 110  
Actuated Cycle Length: 110  
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow, Master Intersection  
Natural Cycle: 120  
Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 1.03  
Intersection Signal Delay: 25.8  
Intersection Capacity Utilization 80.2%  
Analysis Period (min) 15  
~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.  
# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.  
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

|                                                                                            |                                                                                            |                                                                                          |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø3 |  Ø4 |
| 10.2 s                                                                                     | 60.8 s                                                                                     | 22 s                                                                                     | 17 s                                                                                     |
|  Ø6 (R) |                                                                                            |                                                                                          |                                                                                          |
| 71 s                                                                                       |                                                                                            |                                                                                          |                                                                                          |

# 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Drive 2040 Improved Concept A Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 135                                                                               | 3                                                                                 | 73                                                                                | 4                                                                                 | 0                                                                                 | 36                                                                                | 40                                                                                | 778                                                                                 | 1                                                                                   | 5                                                                                   | 1171                                                                                | 166                                                                                 |
| Future Volume (vph)     | 135                                                                               | 3                                                                                 | 73                                                                                | 4                                                                                 | 0                                                                                 | 36                                                                                | 40                                                                                | 778                                                                                 | 1                                                                                   | 5                                                                                   | 1171                                                                                | 166                                                                                 |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 50                                                                                |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                     | 0                                                                                   | 200                                                                                 |                                                                                     | 0                                                                                   |
| Storage Lanes           | 1                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 50                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                     |                                                                                     | 50                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Frt                     |                                                                                   | 0.893                                                                             |                                                                                   |                                                                                   | 0.878                                                                             |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     | 0.981                                                                               |                                                                                     |
| Flt Protected           | 0.950                                                                             | 0.988                                                                             |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   | 0.998                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1905                                                                              | 1561                                                                              | 0                                                                                 | 0                                                                                 | 1844                                                                              | 0                                                                                 | 0                                                                                 | 3532                                                                                | 0                                                                                   | 0                                                                                   | 3472                                                                                | 0                                                                                   |
| Flt Permitted           | 0.950                                                                             | 0.988                                                                             |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   | 0.805                                                                               |                                                                                     |                                                                                     | 0.953                                                                               |                                                                                     |
| Satd. Flow (perm)       | 1905                                                                              | 1561                                                                              | 0                                                                                 | 0                                                                                 | 1844                                                                              | 0                                                                                 | 0                                                                                 | 2849                                                                                | 0                                                                                   | 0                                                                                   | 3309                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 91                                                                                |                                                                                   |                                                                                   | 122                                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     | 26                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 347                                                                               |                                                                                   |                                                                                   | 133                                                                               |                                                                                   |                                                                                   | 293                                                                                 |                                                                                     |                                                                                     | 336                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.5                                                                               |                                                                                   |                                                                                   | 3.6                                                                               |                                                                                   |                                                                                   | 6.7                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.97                                                                              | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                |
| Adj. Flow (vph)         | 169                                                                               | 4                                                                                 | 91                                                                                | 5                                                                                 | 0                                                                                 | 45                                                                                | 41                                                                                | 802                                                                                 | 1                                                                                   | 5                                                                                   | 1207                                                                                | 171                                                                                 |
| Shared Lane Traffic (%) | 19%                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 137                                                                               | 127                                                                               | 0                                                                                 | 0                                                                                 | 50                                                                                | 0                                                                                 | 0                                                                                 | 844                                                                                 | 0                                                                                   | 0                                                                                   | 1383                                                                                | 0                                                                                   |
| Turn Type               | Split                                                                             | NA                                                                                |                                                                                   | Split                                                                             | NA                                                                                |                                                                                   | pm+pt                                                                             | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        | 4                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 2                                                                                 |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 4                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 15.0                                                                                |                                                                                     | 15.0                                                                                | 15.0                                                                                |                                                                                     |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              |                                                                                   | 9.0                                                                               | 9.0                                                                               |                                                                                   | 10.9                                                                              | 20.4                                                                                |                                                                                     | 20.4                                                                                | 20.4                                                                                |                                                                                     |
| Total Split (s)         | 18.0                                                                              | 18.0                                                                              |                                                                                   | 9.0                                                                               | 9.0                                                                               |                                                                                   | 10.9                                                                              | 83.0                                                                                |                                                                                     | 72.1                                                                                | 72.1                                                                                |                                                                                     |
| Total Split (%)         | 16.4%                                                                             | 16.4%                                                                             |                                                                                   | 8.2%                                                                              | 8.2%                                                                              |                                                                                   | 9.9%                                                                              | 75.5%                                                                               |                                                                                     | 65.5%                                                                               | 65.5%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 4.2                                                                               | 4.2                                                                                 |                                                                                     | 4.2                                                                                 | 4.2                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               |                                                                                   | 1.0                                                                               | 1.0                                                                               |                                                                                   | 1.7                                                                               | 1.2                                                                                 |                                                                                     | 1.2                                                                                 | 1.2                                                                                 |                                                                                     |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                   | 5.4                                                                                 |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Lag                                                                               |                                                                                     |                                                                                     | Lead                                                                                | Lead                                                                                |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 | Yes                                                                                 |                                                                                     |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              |                                                                                   | None                                                                              | C-Min                                                                               |                                                                                     | C-Min                                                                               | C-Min                                                                               |                                                                                     |
| Act Effect Green (s)    | 12.5                                                                              | 12.5                                                                              |                                                                                   |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   | 80.4                                                                                |                                                                                     |                                                                                     | 80.4                                                                                |                                                                                     |
| Actuated g/C Ratio      | 0.11                                                                              | 0.11                                                                              |                                                                                   |                                                                                   | 0.05                                                                              |                                                                                   |                                                                                   | 0.73                                                                                |                                                                                     |                                                                                     | 0.73                                                                                |                                                                                     |
| v/c Ratio               | 0.63                                                                              | 0.49                                                                              |                                                                                   |                                                                                   | 0.24                                                                              |                                                                                   |                                                                                   | 0.41                                                                                |                                                                                     |                                                                                     | 0.57                                                                                |                                                                                     |
| Control Delay           | 59.4                                                                              | 22.1                                                                              |                                                                                   |                                                                                   | 2.7                                                                               |                                                                                   |                                                                                   | 2.2                                                                                 |                                                                                     |                                                                                     | 3.9                                                                                 |                                                                                     |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.1                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             | 59.4                                                                              | 22.1                                                                              |                                                                                   |                                                                                   | 2.7                                                                               |                                                                                   |                                                                                   | 2.3                                                                                 |                                                                                     |                                                                                     | 3.9                                                                                 |                                                                                     |
| LOS                     | E                                                                                 | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 41.4                                                                              |                                                                                   |                                                                                   | 2.7                                                                               |                                                                                   |                                                                                   | 2.3                                                                                 |                                                                                     |                                                                                     | 3.9                                                                                 |                                                                                     |
| Approach LOS            |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Queue Length 50th (ft)  | 98                                                                                | 25                                                                                |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 52                                                                                  |                                                                                     |                                                                                     | 57                                                                                  |                                                                                     |



# 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Driveway Lanes, Volumes, Timings

2040 Improved Concept A  
Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  | 140                                                                               | 64                                                                                |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 2                                                                                   |                                                                                     |                                                                                     | m207                                                                                |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 267                                                                               |                                                                                   |                                                                                   | 53                                                                                |                                                                                   |                                                                                    | 213                                                                                 |                                                                                     |                                                                                     | 256                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 253                                                                               | 286                                                                               |                                                                                   |                                                                                   | 209                                                                               |                                                                                   |                                                                                    | 2104                                                                                |                                                                                     |                                                                                     | 2425                                                                                |                                                                                     |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 367                                                                                 |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   | 0                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 62                                                                                  |                                                                                     |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       | 0.54                                                                              | 0.45                                                                              |                                                                                   |                                                                                   | 0.24                                                                              |                                                                                   |                                                                                    | 0.49                                                                                |                                                                                     |                                                                                     | 0.59                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 64 (58%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 7.3

Intersection LOS: A

Intersection Capacity Utilization 71.8%

ICU Level of Service C

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Driveway

|                                                                                            |                                                                                          |                                                                                          |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø2 (R) |  Ø4 |  Ø8 |
| 83 s                                                                                       | 18 s                                                                                     | 9 s                                                                                      |
|  Ø6 (R) |  Ø5 |                                                                                          |
| 72.1 s                                                                                     | 10.9 s                                                                                   |                                                                                          |

# 104: Route 58 (Black Rock Turnpike) & Fairfield Woods Road

## Lanes, Volumes, Timings

2040 Improved Concept A

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Lane Configurations     |  |  |  |                                                                                   |  |  |
| Traffic Volume (vph)    | 84                                                                                | 110                                                                               | 735                                                                               | 108                                                                               | 292                                                                               | 955                                                                               |
| Future Volume (vph)     | 84                                                                                | 110                                                                               | 735                                                                               | 108                                                                               | 292                                                                               | 955                                                                               |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                |
| Storage Length (ft)     | 0                                                                                 | 75                                                                                |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |
| Storage Lanes           | 1                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   |
| Taper Length (ft)       | 25                                                                                |                                                                                   |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     |                                                                                   | 0.850                                                                             | 0.981                                                                             |                                                                                   |                                                                                   |                                                                                   |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |
| Satd. Flow (prot)       | 1770                                                                              | 1531                                                                              | 3356                                                                              | 0                                                                                 | 1770                                                                              | 1801                                                                              |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.273                                                                             |                                                                                   |
| Satd. Flow (perm)       | 1770                                                                              | 1531                                                                              | 3356                                                                              | 0                                                                                 | 509                                                                               | 1801                                                                              |
| Right Turn on Red       |                                                                                   | No                                                                                |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |
| Satd. Flow (RTOR)       |                                                                                   |                                                                                   | 23                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Link Speed (mph)        | 25                                                                                |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |
| Link Distance (ft)      | 499                                                                               |                                                                                   | 535                                                                               |                                                                                   |                                                                                   | 293                                                                               |
| Travel Time (s)         | 13.6                                                                              |                                                                                   | 12.2                                                                              |                                                                                   |                                                                                   | 6.7                                                                               |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.93                                                                              | 0.93                                                                              | 0.98                                                                              | 0.98                                                                              |
| Adj. Flow (vph)         | 105                                                                               | 138                                                                               | 790                                                                               | 116                                                                               | 298                                                                               | 974                                                                               |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 105                                                                               | 138                                                                               | 906                                                                               | 0                                                                                 | 298                                                                               | 974                                                                               |
| Turn Type               | Prot                                                                              | Perm                                                                              | NA                                                                                |                                                                                   | pm+pt                                                                             | NA                                                                                |
| Protected Phases        | 4                                                                                 |                                                                                   | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |
| Permitted Phases        |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |
| Detector Phase          | 4                                                                                 | 4                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               | 15.0                                                                              |                                                                                   | 5.0                                                                               | 15.0                                                                              |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              | 20.3                                                                              |                                                                                   | 11.5                                                                              | 20.3                                                                              |
| Total Split (s)         | 22.0                                                                              | 22.0                                                                              | 64.0                                                                              |                                                                                   | 24.0                                                                              | 88.0                                                                              |
| Total Split (%)         | 20.0%                                                                             | 20.0%                                                                             | 58.2%                                                                             |                                                                                   | 21.8%                                                                             | 80.0%                                                                             |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               | 4.3                                                                               |                                                                                   | 4.3                                                                               | 4.3                                                                               |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               |                                                                                   | 2.2                                                                               | 1.0                                                                               |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               | 5.3                                                                               |                                                                                   | 6.5                                                                               | 5.3                                                                               |
| Lead/Lag                |                                                                                   |                                                                                   | Lead                                                                              |                                                                                   | Lag                                                                               |                                                                                   |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   | Yes                                                                               |                                                                                   |
| Recall Mode             | None                                                                              | None                                                                              | C-Min                                                                             |                                                                                   | None                                                                              | C-Min                                                                             |
| Act Effect Green (s)    | 14.4                                                                              | 14.4                                                                              | 68.1                                                                              |                                                                                   | 85.1                                                                              | 86.3                                                                              |
| Actuated g/C Ratio      | 0.13                                                                              | 0.13                                                                              | 0.62                                                                              |                                                                                   | 0.77                                                                              | 0.78                                                                              |
| v/c Ratio               | 0.45                                                                              | 0.69                                                                              | 0.43                                                                              |                                                                                   | 0.56                                                                              | 0.69                                                                              |
| Control Delay           | 49.5                                                                              | 62.9                                                                              | 13.6                                                                              |                                                                                   | 10.3                                                                              | 6.5                                                                               |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.9                                                                               | 0.2                                                                               |
| Total Delay             | 49.5                                                                              | 62.9                                                                              | 13.6                                                                              |                                                                                   | 11.2                                                                              | 6.7                                                                               |
| LOS                     | D                                                                                 | E                                                                                 | B                                                                                 |                                                                                   | B                                                                                 | A                                                                                 |
| Approach Delay          | 57.1                                                                              |                                                                                   | 13.6                                                                              |                                                                                   |                                                                                   | 7.7                                                                               |
| Approach LOS            | E                                                                                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | A                                                                                 |
| Queue Length 50th (ft)  | 70                                                                                | 95                                                                                | 143                                                                               |                                                                                   | 16                                                                                | 47                                                                                |

# 104: Route 58 (Black Rock Turnpike) & Fairfield Woods Road Lanes, Volumes, Timings

2040 Improved Concept A  
Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Queue Length 95th (ft)  | 103                                                                               | 133                                                                               | 313                                                                               |                                                                                   | 120                                                                               | 777                                                                               |
| Internal Link Dist (ft) | 419                                                                               |                                                                                   | 455                                                                               |                                                                                   |                                                                                   | 213                                                                               |
| Turn Bay Length (ft)    |                                                                                   | 75                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Base Capacity (vph)     | 296                                                                               | 256                                                                               | 2151                                                                              |                                                                                   | 648                                                                               | 1421                                                                              |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 151                                                                               | 65                                                                                |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |
| Reduced v/c Ratio       | 0.35                                                                              | 0.54                                                                              | 0.42                                                                              |                                                                                   | 0.60                                                                              | 0.72                                                                              |

## Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 58 (53%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 14.9

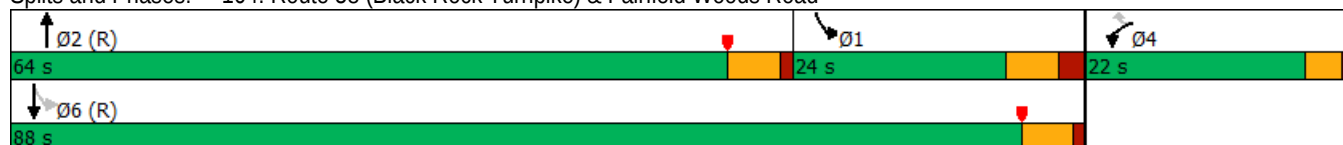
Intersection LOS: B

Intersection Capacity Utilization 65.5%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Fairfield Woods Road



# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Improved Concept A Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (vph)    | 90                                                                                | 791                                                                               | 157                                                                               | 148                                                                               | 625                                                                               | 131                                                                               | 232                                                                                 | 279                                                                                 | 177                                                                                 | 199                                                                                 | 270                                                                                 | 44                                                                                  |
| Future Volume (vph)     | 90                                                                                | 791                                                                               | 157                                                                               | 148                                                                               | 625                                                                               | 131                                                                               | 232                                                                                 | 279                                                                                 | 177                                                                                 | 199                                                                                 | 270                                                                                 | 44                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 11                                                                                | 11                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                  | 11                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 200                                                                               |                                                                                   | 325                                                                               | 200                                                                               |                                                                                   | 0                                                                                 | 400                                                                                 |                                                                                     | 75                                                                                  | 170                                                                                 |                                                                                     | 75                                                                                  |
| Storage Lanes           | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                   |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)       | 85                                                                                |                                                                                   |                                                                                   | 50                                                                                |                                                                                   |                                                                                   | 100                                                                                 |                                                                                     |                                                                                     | 100                                                                                 |                                                                                     |                                                                                     |
| Lane Util. Factor       | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.975                                                                             |                                                                                   |                                                                                   | 0.974                                                                             |                                                                                   |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1711                                                                              | 3336                                                                              | 0                                                                                 | 1711                                                                              | 3447                                                                              | 0                                                                                 | 1711                                                                                | 1801                                                                                | 1583                                                                                | 1770                                                                                | 1863                                                                                | 1583                                                                                |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.244                                                                               |                                                                                     |                                                                                     | 0.322                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 1711                                                                              | 3336                                                                              | 0                                                                                 | 1711                                                                              | 3447                                                                              | 0                                                                                 | 439                                                                                 | 1801                                                                                | 1583                                                                                | 600                                                                                 | 1863                                                                                | 1583                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | No                                                                                  |
| Satd. Flow (RTOR)       |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 17                                                                                |                                                                                   |                                                                                     |                                                                                     | 125                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 628                                                                               |                                                                                   |                                                                                   | 408                                                                               |                                                                                   |                                                                                     | 637                                                                                 |                                                                                     |                                                                                     | 355                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 14.3                                                                              |                                                                                   |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                     | 14.5                                                                                |                                                                                     |                                                                                     | 9.7                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                |
| Adj. Flow (vph)         | 96                                                                                | 841                                                                               | 167                                                                               | 153                                                                               | 644                                                                               | 135                                                                               | 261                                                                                 | 313                                                                                 | 199                                                                                 | 229                                                                                 | 310                                                                                 | 51                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 96                                                                                | 1008                                                                              | 0                                                                                 | 153                                                                               | 779                                                                               | 0                                                                                 | 261                                                                                 | 313                                                                                 | 199                                                                                 | 229                                                                                 | 310                                                                                 | 51                                                                                  |
| Turn Type               | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | NA                                                                                |                                                                                   | pm+pt                                                                               | NA                                                                                  | Perm                                                                                | pm+pt                                                                               | NA                                                                                  | Perm                                                                                |
| Protected Phases        | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 7                                                                                   | 4                                                                                   |                                                                                     | 3                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   | 8                                                                                   |                                                                                     | 8                                                                                   |
| Detector Phase          | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 7                                                                                   | 4                                                                                   | 4                                                                                   | 3                                                                                   | 8                                                                                   | 8                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 15.0                                                                              |                                                                                   | 5.0                                                                               | 15.0                                                                              |                                                                                   | 5.0                                                                                 | 10.0                                                                                | 10.0                                                                                | 5.0                                                                                 | 10.0                                                                                | 10.0                                                                                |
| Minimum Split (s)       | 9.7                                                                               | 21.6                                                                              |                                                                                   | 9.7                                                                               | 21.6                                                                              |                                                                                   | 9.3                                                                                 | 16.8                                                                                | 16.8                                                                                | 9.3                                                                                 | 16.8                                                                                | 16.8                                                                                |
| Total Split (s)         | 16.6                                                                              | 46.0                                                                              |                                                                                   | 18.0                                                                              | 47.4                                                                              |                                                                                   | 19.0                                                                                | 31.0                                                                                | 31.0                                                                                | 17.0                                                                                | 29.0                                                                                | 29.0                                                                                |
| Total Split (%)         | 11.4%                                                                             | 31.7%                                                                             |                                                                                   | 12.4%                                                                             | 32.7%                                                                             |                                                                                   | 13.1%                                                                               | 21.4%                                                                               | 21.4%                                                                               | 11.7%                                                                               | 20.0%                                                                               | 20.0%                                                                               |
| Yellow Time (s)         | 3.0                                                                               | 4.1                                                                               |                                                                                   | 3.0                                                                               | 4.1                                                                               |                                                                                   | 3.3                                                                                 | 4.4                                                                                 | 4.4                                                                                 | 3.3                                                                                 | 4.4                                                                                 | 4.4                                                                                 |
| All-Red Time (s)        | 1.7                                                                               | 2.5                                                                               |                                                                                   | 1.7                                                                               | 2.5                                                                               |                                                                                   | 1.0                                                                                 | 2.4                                                                                 | 2.4                                                                                 | 1.0                                                                                 | 2.4                                                                                 | 2.4                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 4.7                                                                               | 6.6                                                                               |                                                                                   | 4.7                                                                               | 6.6                                                                               |                                                                                   | 4.3                                                                                 | 6.8                                                                                 | 6.8                                                                                 | 4.3                                                                                 | 6.8                                                                                 | 6.8                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode             | None                                                                              | Min                                                                               |                                                                                   | None                                                                              | Min                                                                               |                                                                                   | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Act Effct Green (s)     | 10.5                                                                              | 39.4                                                                              |                                                                                   | 13.3                                                                              | 42.2                                                                              |                                                                                   | 41.4                                                                                | 24.2                                                                                | 24.2                                                                                | 37.4                                                                                | 22.2                                                                                | 22.2                                                                                |
| Actuated g/C Ratio      | 0.09                                                                              | 0.35                                                                              |                                                                                   | 0.12                                                                              | 0.38                                                                              |                                                                                   | 0.37                                                                                | 0.22                                                                                | 0.22                                                                                | 0.33                                                                                | 0.20                                                                                | 0.20                                                                                |
| v/c Ratio               | 0.60                                                                              | 0.85                                                                              |                                                                                   | 0.75                                                                              | 0.60                                                                              |                                                                                   | 0.79                                                                                | 0.80                                                                                | 0.45                                                                                | 0.69                                                                                | 0.84                                                                                | 0.16                                                                                |
| Control Delay           | 64.2                                                                              | 41.4                                                                              |                                                                                   | 71.2                                                                              | 30.0                                                                              |                                                                                   | 44.1                                                                                | 58.6                                                                                | 18.5                                                                                | 36.6                                                                                | 64.1                                                                                | 38.9                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 64.2                                                                              | 41.4                                                                              |                                                                                   | 71.2                                                                              | 30.0                                                                              |                                                                                   | 44.1                                                                                | 58.6                                                                                | 18.5                                                                                | 36.6                                                                                | 64.1                                                                                | 38.9                                                                                |
| LOS                     | E                                                                                 | D                                                                                 |                                                                                   | E                                                                                 | C                                                                                 |                                                                                   | D                                                                                   | E                                                                                   | B                                                                                   | D                                                                                   | E                                                                                   | D                                                                                   |
| Approach Delay          |                                                                                   | 43.4                                                                              |                                                                                   |                                                                                   | 36.8                                                                              |                                                                                   |                                                                                     | 43.4                                                                                |                                                                                     |                                                                                     | 51.2                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Queue Length 50th (ft)  | 67                                                                                | 345                                                                               |                                                                                   | 108                                                                               | 233                                                                               |                                                                                   | 133                                                                                 | 215                                                                                 | 44                                                                                  | 114                                                                                 | 217                                                                                 | 31                                                                                  |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Improved Concept A Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

| Lane Group              | Ø9   |
|-------------------------|------|
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 33.0 |
| Total Split (s)         | 33.0 |
| Total Split (%)         | 23%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Improved Concept A Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  | 122                                                                               | 434                                                                               |                                                                                   | #209                                                                              | 300                                                                               |                                                                                   | #222                                                                               | #346                                                                                | 112                                                                                 | 170                                                                                 | #341                                                                                | 64                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 548                                                                               |                                                                                   |                                                                                   | 328                                                                               |                                                                                   |                                                                                    | 557                                                                                 |                                                                                     |                                                                                     | 275                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 200                                                                               |                                                                                   |                                                                                   | 200                                                                               |                                                                                   |                                                                                   | 400                                                                                |                                                                                     | 75                                                                                  | 170                                                                                 |                                                                                     | 75                                                                                  |
| Base Capacity (vph)     | 181                                                                               | 1183                                                                              |                                                                                   | 203                                                                               | 1308                                                                              |                                                                                   | 329                                                                                | 389                                                                                 | 440                                                                                 | 333                                                                                 | 369                                                                                 | 313                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.53                                                                              | 0.85                                                                              |                                                                                   | 0.75                                                                              | 0.60                                                                              |                                                                                   | 0.79                                                                               | 0.80                                                                                | 0.45                                                                                | 0.69                                                                                | 0.84                                                                                | 0.16                                                                                |

## Intersection Summary

Area Type: Other

Cycle Length: 145

Actuated Cycle Length: 112

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 42.9

Intersection LOS: D

Intersection Capacity Utilization 80.8%

ICU Level of Service D

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)

|                                                                                        |                                                                                        |                                                                                        |                                                                                          |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø9 |  Ø3 |  Ø4 |
| 18 s                                                                                   | 46 s                                                                                   | 33 s                                                                                   | 17 s                                                                                     | 31 s                                                                                     |
|  Ø5 |  Ø6 |                                                                                        |  Ø7 |  Ø8 |
| 16.6 s                                                                                 | 47.4 s                                                                                 |                                                                                        | 19 s                                                                                     | 29 s                                                                                     |



|                         |    |
|-------------------------|----|
| Lane Group              | Ø9 |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & 2040-50 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |  |  |                                                                                   |                                                                                    |                                                                                     |  |                                                                                     |                                                                                     |  |
| Traffic Volume (vph)    | 74                                                                                | 916                                                                               | 22                                                                                | 82                                                                                | 892                                                                               | 74                                                                                | 0                                                                                  | 0                                                                                   | 300                                                                                 | 0                                                                                   | 0                                                                                   | 31                                                                                  |
| Future Volume (vph)     | 74                                                                                | 916                                                                               | 22                                                                                | 82                                                                                | 892                                                                               | 74                                                                                | 0                                                                                  | 0                                                                                   | 300                                                                                 | 0                                                                                   | 0                                                                                   | 31                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                 | 13                                                                                  | 13                                                                                  | 12                                                                                  | 13                                                                                  | 13                                                                                  |
| Storage Length (ft)     | 65                                                                                |                                                                                   | 0                                                                                 | 100                                                                               |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 25                                                                                  | 0                                                                                   |                                                                                     | 25                                                                                  |
| Storage Lanes           | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 50                                                                                |                                                                                   |                                                                                   | 50                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                   | 0.989                                                                             |                                                                                   |                                                                                    |                                                                                     | 0.865                                                                               |                                                                                     |                                                                                     | 0.865                                                                               |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1770                                                                              | 3408                                                                              | 0                                                                                 | 1770                                                                              | 1781                                                                              | 0                                                                                 | 0                                                                                  | 0                                                                                   | 1665                                                                                | 0                                                                                   | 0                                                                                   | 1665                                                                                |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 1770                                                                              | 3408                                                                              | 0                                                                                 | 1770                                                                              | 1781                                                                              | 0                                                                                 | 0                                                                                  | 0                                                                                   | 1665                                                                                | 0                                                                                   | 0                                                                                   | 1665                                                                                |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 401                                                                               |                                                                                   |                                                                                   | 502                                                                               |                                                                                   |                                                                                    | 114                                                                                 |                                                                                     |                                                                                     | 133                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.1                                                                               |                                                                                   |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                    | 3.1                                                                                 |                                                                                     |                                                                                     | 3.6                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.84                                                                               | 0.84                                                                                | 0.84                                                                                | 0.85                                                                                | 0.85                                                                                | 0.85                                                                                |
| Adj. Flow (vph)         | 80                                                                                | 985                                                                               | 24                                                                                | 91                                                                                | 991                                                                               | 82                                                                                | 0                                                                                  | 0                                                                                   | 357                                                                                 | 0                                                                                   | 0                                                                                   | 36                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 80                                                                                | 1009                                                                              | 0                                                                                 | 91                                                                                | 1073                                                                              | 0                                                                                 | 0                                                                                  | 0                                                                                   | 357                                                                                 | 0                                                                                   | 0                                                                                   | 36                                                                                  |
| Sign Control            |                                                                                   | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              |                                                                                   |                                                                                    | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 62.2% ICU Level of Service B

Analysis Period (min) 15

106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & 2040-50 (Black Rock Turnpike) HCM 2010 TWSC

Timing Plan: Weekday PM Peak

| Intersection             |                                                                                   |                                                                                   |      |                                                                                   |                                                                                   |      |      |      |                                                                                   |      |      |                                                                                     |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|
| Int Delay, s/veh         | 4.6                                                                               |                                                                                   |      |                                                                                   |                                                                                   |      |      |      |                                                                                   |      |      |                                                                                     |
| Movement                 | EBL                                                                               | EBT                                                                               | EBR  | WBL                                                                               | WBT                                                                               | WBR  | NBL  | NBT  | NBR                                                                               | SBL  | SBT  | SBR                                                                                 |
| Lane Configurations      |  |  |      |  |  |      |      |      |  |      |      |  |
| Traffic Vol, veh/h       | 74                                                                                | 916                                                                               | 22   | 82                                                                                | 892                                                                               | 74   | 0    | 0    | 300                                                                               | 0    | 0    | 31                                                                                  |
| Future Vol, veh/h        | 74                                                                                | 916                                                                               | 22   | 82                                                                                | 892                                                                               | 74   | 0    | 0    | 300                                                                               | 0    | 0    | 31                                                                                  |
| Conflicting Peds, #/hr   | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0    | 0    | 0    | 0                                                                                 | 0    | 0    | 0                                                                                   |
| Sign Control             | Free                                                                              | Free                                                                              | Free | Free                                                                              | Free                                                                              | Free | Stop | Stop | Stop                                                                              | Stop | Stop | Stop                                                                                |
| RT Channelized           | -                                                                                 | -                                                                                 | None | -                                                                                 | -                                                                                 | None | -    | -    | None                                                                              | -    | -    | None                                                                                |
| Storage Length           | 65                                                                                | -                                                                                 | -    | 100                                                                               | -                                                                                 | -    | -    | -    | -                                                                                 | -    | -    | -                                                                                   |
| Veh in Median Storage, # | -                                                                                 | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | -    | -    | 0    | -                                                                                 | -    | 0    | -                                                                                   |
| Grade, %                 | -                                                                                 | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | -    | -    | 0    | -                                                                                 | -    | 0    | -                                                                                   |
| Peak Hour Factor         | 93                                                                                | 93                                                                                | 93   | 90                                                                                | 90                                                                                | 90   | 84   | 84   | 84                                                                                | 85   | 85   | 85                                                                                  |
| Heavy Vehicles, %        | 2                                                                                 | 2                                                                                 | 2    | 2                                                                                 | 2                                                                                 | 2    | 2    | 2    | 2                                                                                 | 2    | 2    | 2                                                                                   |
| Mvmt Flow                | 80                                                                                | 985                                                                               | 24   | 91                                                                                | 991                                                                               | 82   | 0    | 0    | 357                                                                               | 0    | 0    | 36                                                                                  |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |   |       | Minor2 |   |       |
|----------------------|--------|---|---|--------|---|---|--------|---|-------|--------|---|-------|
| Conflicting Flow All | 1073   | 0 | 0 | 1009   | 0 | 0 | -      | - | 505   | -      | - | 1032  |
| Stage 1              | -      | - | - | -      | - | - | -      | - | -     | -      | - | -     |
| Stage 2              | -      | - | - | -      | - | - | -      | - | -     | -      | - | -     |
| Critical Hdwy        | 4.13   | - | - | 4.13   | - | - | -      | - | 6.93  | -      | - | 6.23  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | -      | - | -     | -      | - | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | -      | - | -     | -      | - | -     |
| Follow-up Hdwy       | 2.219  | - | - | 2.219  | - | - | -      | - | 3.319 | -      | - | 3.319 |
| Pot Cap-1 Maneuver   | 648    | - | - | 685    | - | - | 0      | 0 | 513   | 0      | 0 | 282   |
| Stage 1              | -      | - | - | -      | - | - | 0      | 0 | -     | 0      | 0 | -     |
| Stage 2              | -      | - | - | -      | - | - | 0      | 0 | -     | 0      | 0 | -     |
| Platoon blocked, %   |        | - | - |        | - | - |        |   |       |        |   |       |
| Mov Cap-1 Maneuver   | 648    | - | - | 685    | - | - | -      | - | 513   | -      | - | 282   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | -      | - | -     | -      | - | -     |
| Stage 1              | -      | - | - | -      | - | - | -      | - | -     | -      | - | -     |
| Stage 2              | -      | - | - | -      | - | - | -      | - | -     | -      | - | -     |

| Approach             | EB  |  |  | WB  |  |  | NB   |  |  | SB   |  |  |
|----------------------|-----|--|--|-----|--|--|------|--|--|------|--|--|
| HCM Control Delay, s | 0.8 |  |  | 0.9 |  |  | 26.6 |  |  | 19.7 |  |  |
| HCM LOS              |     |  |  |     |  |  | D    |  |  | C    |  |  |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 513   | 648   | -   | -   | 685   | -   | -   | 282   |
| HCM Lane V/C Ratio    | 0.696 | 0.123 | -   | -   | 0.133 | -   | -   | 0.129 |
| HCM Control Delay (s) | 26.6  | 11.3  | -   | -   | 11.1  | -   | -   | 19.7  |
| HCM Lane LOS          | D     | B     | -   | -   | B     | -   | -   | C     |
| HCM 95th %tile Q(veh) | 5.4   | 0.4   | -   | -   | 0.5   | -   | -   | 0.4   |

## 108: Burroughs Road &amp; Route 58 (Black Rock Turnpike)

## 2040 Improved Concept A

## Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |                                                                                   |  |  |                                                                                   |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (vph)    | 86                                                                                | 973                                                                               | 15                                                                                | 0                                                                                 | 753                                                                               | 156                                                                               | 18                                                                                | 110                                                                                 | 7                                                                                   | 129                                                                                 | 52                                                                                  | 52                                                                                  |
| Future Volume (vph)     | 86                                                                                | 973                                                                               | 15                                                                                | 0                                                                                 | 753                                                                               | 156                                                                               | 18                                                                                | 110                                                                                 | 7                                                                                   | 129                                                                                 | 52                                                                                  | 52                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 16                                                                                  | 12                                                                                  | 12                                                                                  | 16                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 65                                                                                |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 130                                                                               | 0                                                                                 |                                                                                     | 0                                                                                   | 125                                                                                 |                                                                                     | 0                                                                                   |
| Storage Lanes           | 1                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 1                                                                                 | 0                                                                                 |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 50                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                     |                                                                                     | 50                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   | 0.993                                                                               |                                                                                     |                                                                                     | 0.925                                                                               |                                                                                     |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.993                                                                               |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1770                                                                              | 3414                                                                              | 0                                                                                 | 0                                                                                 | 1801                                                                              | 1583                                                                              | 0                                                                                 | 2082                                                                                | 0                                                                                   | 1770                                                                                | 1953                                                                                | 0                                                                                   |
| Flt Permitted           | 0.243                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.932                                                                               |                                                                                     | 0.766                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 453                                                                               | 3414                                                                              | 0                                                                                 | 0                                                                                 | 1801                                                                              | 1583                                                                              | 0                                                                                 | 1954                                                                                | 0                                                                                   | 1427                                                                                | 1953                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   |                                                                                   | 170                                                                               |                                                                                   | 4                                                                                   |                                                                                     |                                                                                     | 56                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 407                                                                               |                                                                                   |                                                                                   | 390                                                                               |                                                                                   |                                                                                   | 466                                                                                 |                                                                                     |                                                                                     | 265                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                   | 8.9                                                                               |                                                                                   |                                                                                   | 12.7                                                                                |                                                                                     |                                                                                     | 7.2                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.99                                                                              | 0.99                                                                              | 0.99                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.90                                                                              | 0.90                                                                                | 0.90                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Adj. Flow (vph)         | 87                                                                                | 983                                                                               | 15                                                                                | 0                                                                                 | 818                                                                               | 170                                                                               | 20                                                                                | 122                                                                                 | 8                                                                                   | 139                                                                                 | 56                                                                                  | 56                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 87                                                                                | 998                                                                               | 0                                                                                 | 0                                                                                 | 818                                                                               | 170                                                                               | 0                                                                                 | 150                                                                                 | 0                                                                                   | 139                                                                                 | 112                                                                                 | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   |                                                                                   | NA                                                                                | Perm                                                                              | Perm                                                                              | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 2                                                                                 | 4                                                                                 |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 6                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 | 2                                                                                 | 4                                                                                 | 4                                                                                   |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 15.0                                                                              | 15.0                                                                              |                                                                                   |                                                                                   | 15.0                                                                              | 15.0                                                                              | 9.0                                                                               | 9.0                                                                                 |                                                                                     | 9.0                                                                                 | 9.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 20.6                                                                              | 20.6                                                                              |                                                                                   |                                                                                   | 20.6                                                                              | 20.6                                                                              | 14.4                                                                              | 14.4                                                                                |                                                                                     | 14.4                                                                                | 14.4                                                                                |                                                                                     |
| Total Split (s)         | 44.0                                                                              | 44.0                                                                              |                                                                                   |                                                                                   | 44.0                                                                              | 44.0                                                                              | 16.0                                                                              | 16.0                                                                                |                                                                                     | 16.0                                                                                | 16.0                                                                                |                                                                                     |
| Total Split (%)         | 73.3%                                                                             | 73.3%                                                                             |                                                                                   |                                                                                   | 73.3%                                                                             | 73.3%                                                                             | 26.7%                                                                             | 26.7%                                                                               |                                                                                     | 26.7%                                                                               | 26.7%                                                                               |                                                                                     |
| Yellow Time (s)         | 4.1                                                                               | 4.1                                                                               |                                                                                   |                                                                                   | 4.1                                                                               | 4.1                                                                               | 3.1                                                                               | 3.1                                                                                 |                                                                                     | 3.1                                                                                 | 3.1                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.5                                                                               | 1.5                                                                               |                                                                                   |                                                                                   | 1.5                                                                               | 1.5                                                                               | 2.3                                                                               | 2.3                                                                                 |                                                                                     | 2.3                                                                                 | 2.3                                                                                 |                                                                                     |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     | 5.6                                                                               | 5.6                                                                               |                                                                                   |                                                                                   | 5.6                                                                               | 5.6                                                                               |                                                                                   | 5.4                                                                                 |                                                                                     | 5.4                                                                                 | 5.4                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | Min                                                                               | Min                                                                               |                                                                                   |                                                                                   | Min                                                                               | Min                                                                               | None                                                                              | None                                                                                |                                                                                     | None                                                                                | None                                                                                |                                                                                     |
| Act Effct Green (s)     | 32.5                                                                              | 32.5                                                                              |                                                                                   |                                                                                   | 32.5                                                                              | 32.5                                                                              |                                                                                   | 10.1                                                                                |                                                                                     | 10.1                                                                                | 10.1                                                                                |                                                                                     |
| Actuated g/C Ratio      | 0.67                                                                              | 0.67                                                                              |                                                                                   |                                                                                   | 0.67                                                                              | 0.67                                                                              |                                                                                   | 0.21                                                                                |                                                                                     | 0.21                                                                                | 0.21                                                                                |                                                                                     |
| v/c Ratio               | 0.29                                                                              | 0.44                                                                              |                                                                                   |                                                                                   | 0.68                                                                              | 0.15                                                                              |                                                                                   | 0.37                                                                                |                                                                                     | 0.47                                                                                | 0.25                                                                                |                                                                                     |
| Control Delay           | 8.3                                                                               | 6.1                                                                               |                                                                                   |                                                                                   | 10.8                                                                              | 1.2                                                                               |                                                                                   | 22.3                                                                                |                                                                                     | 26.5                                                                                | 13.3                                                                                |                                                                                     |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Delay             | 8.3                                                                               | 6.1                                                                               |                                                                                   |                                                                                   | 10.8                                                                              | 1.2                                                                               |                                                                                   | 22.3                                                                                |                                                                                     | 26.5                                                                                | 13.3                                                                                |                                                                                     |
| LOS                     | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 | A                                                                                 |                                                                                   | C                                                                                   |                                                                                     | C                                                                                   | B                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 6.2                                                                               |                                                                                   |                                                                                   | 9.2                                                                               |                                                                                   |                                                                                   | 22.3                                                                                |                                                                                     |                                                                                     | 20.6                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Queue Length 50th (ft)  | 11                                                                                | 76                                                                                |                                                                                   |                                                                                   | 155                                                                               | 0                                                                                 |                                                                                   | 36                                                                                  |                                                                                     | 36                                                                                  | 13                                                                                  |                                                                                     |

# 108: Burroughs Road & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

2040 Improved Concept A  
Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  | 34                                                                                | 113                                                                               |                                                                                   |                                                                                   | 283                                                                               | 16                                                                                |                                                                                    | 95                                                                                  |                                                                                     | #99                                                                                 | 55                                                                                  |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 327                                                                               |                                                                                   |                                                                                   | 310                                                                               |                                                                                   |                                                                                    | 386                                                                                 |                                                                                     |                                                                                     | 185                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 65                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 130                                                                               |                                                                                    |                                                                                     |                                                                                     | 125                                                                                 |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 365                                                                               | 2756                                                                              |                                                                                   |                                                                                   | 1453                                                                              | 1310                                                                              |                                                                                    | 446                                                                                 |                                                                                     | 324                                                                                 | 486                                                                                 |                                                                                     |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       | 0.24                                                                              | 0.36                                                                              |                                                                                   |                                                                                   | 0.56                                                                              | 0.13                                                                              |                                                                                    | 0.34                                                                                |                                                                                     | 0.43                                                                                | 0.23                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 48.6

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 9.8

Intersection LOS: A

Intersection Capacity Utilization 79.8%

ICU Level of Service D

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)

|                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø2 |  Ø4 |
| 44 s                                                                                   | 16 s                                                                                     |
|  Ø6 |  Ø8 |
| 44 s                                                                                   | 16 s                                                                                     |

201: Tunxis Hill Road & Route 58 (Tunxis Hill Cutoff)  
Lanes, Volumes, Timings

2040 Improved Concept A  
Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |  |
| Traffic Volume (vph)    | 630                                                                               | 6                                                                                 | 49                                                                                | 414                                                                               | 0                                                                                 | 84                                                                                |
| Future Volume (vph)     | 630                                                                               | 6                                                                                 | 49                                                                                | 414                                                                               | 0                                                                                 | 84                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 10                                                                                | 10                                                                                |
| Storage Length (ft)     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 50                                                                                |
| Storage Lanes           |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |
| Taper Length (ft)       |                                                                                   |                                                                                   | 25                                                                                |                                                                                   | 25                                                                                |                                                                                   |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.999                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |
| Flt Protected           |                                                                                   |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 3418                                                                              | 0                                                                                 | 0                                                                                 | 1792                                                                              | 1739                                                                              | 1478                                                                              |
| Flt Permitted           |                                                                                   |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 3418                                                                              | 0                                                                                 | 0                                                                                 | 1792                                                                              | 1739                                                                              | 1478                                                                              |
| Link Speed (mph)        | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                | 25                                                                                |                                                                                   |
| Link Distance (ft)      | 1095                                                                              |                                                                                   |                                                                                   | 214                                                                               | 782                                                                               |                                                                                   |
| Travel Time (s)         | 24.9                                                                              |                                                                                   |                                                                                   | 4.9                                                                               | 21.3                                                                              |                                                                                   |
| Peak Hour Factor        | 0.95                                                                              | 0.95                                                                              | 0.90                                                                              | 0.90                                                                              | 0.83                                                                              | 0.83                                                                              |
| Adj. Flow (vph)         | 663                                                                               | 6                                                                                 | 54                                                                                | 460                                                                               | 0                                                                                 | 101                                                                               |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 669                                                                               | 0                                                                                 | 0                                                                                 | 514                                                                               | 0                                                                                 | 101                                                                               |
| Sign Control            | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 48.8% ICU Level of Service A

Analysis Period (min) 15



Intersection

Int Delay, s/veh 1.3

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↑↑   |      |      | ↑    | ↑    | ↑    |
| Traffic Vol, veh/h       | 630  | 6    | 49   | 414  | 0    | 84   |
| Future Vol, veh/h        | 630  | 6    | 49   | 414  | 0    | 84   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | 0    | 50   |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 95   | 95   | 90   | 90   | 83   | 83   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 663  | 6    | 54   | 460  | 0    | 101  |

| Major/Minor          | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0      | 0      | 669    |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Critical Hdwy        | -      | -      | 4.13   |
| Critical Hdwy Stg 1  | -      | -      | -      |
| Critical Hdwy Stg 2  | -      | -      | -      |
| Follow-up Hdwy       | -      | -      | 2.219  |
| Pot Cap-1 Maneuver   | -      | -      | 919    |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | -      | -      | 919    |
| Mov Cap-2 Maneuver   | -      | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |

| Approach             | EB | WB | NB   |
|----------------------|----|----|------|
| HCM Control Delay, s | 0  | 1  | 11.4 |
| HCM LOS              |    |    | B    |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | -     | 662   | -   | -   | 919   | -   |
| HCM Lane V/C Ratio    | -     | 0.153 | -   | -   | 0.059 | -   |
| HCM Control Delay (s) | 0     | 11.4  | -   | -   | 9.2   | 0   |
| HCM Lane LOS          | A     | B     | -   | -   | A     | A   |
| HCM 95th %tile Q(veh) | -     | 0.5   | -   | -   | 0.2   | -   |

202: Route 732 (Black Rock Turnpike) & Judd Street  
Lanes, Volumes, Timings

2040 Improved Concept A  
Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations     |  |                                                                                   |  |  |  |                                                                                   |
| Traffic Volume (vph)    | 34                                                                                | 96                                                                                | 55                                                                                | 492                                                                               | 562                                                                               | 28                                                                                |
| Future Volume (vph)     | 34                                                                                | 96                                                                                | 55                                                                                | 492                                                                               | 562                                                                               | 28                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Storage Length (ft)     | 0                                                                                 | 0                                                                                 | 25                                                                                |                                                                                   |                                                                                   | 0                                                                                 |
| Storage Lanes           | 1                                                                                 | 0                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.900                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.994                                                                             |                                                                                   |
| Flt Protected           | 0.987                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1875                                                                              | 0                                                                                 | 1770                                                                              | 1863                                                                              | 1852                                                                              | 0                                                                                 |
| Flt Permitted           | 0.987                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1875                                                                              | 0                                                                                 | 1770                                                                              | 1863                                                                              | 1852                                                                              | 0                                                                                 |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 586                                                                               |                                                                                   |                                                                                   | 395                                                                               | 218                                                                               |                                                                                   |
| Travel Time (s)         | 16.0                                                                              |                                                                                   |                                                                                   | 9.0                                                                               | 5.0                                                                               |                                                                                   |
| Peak Hour Factor        | 0.83                                                                              | 0.83                                                                              | 0.91                                                                              | 0.91                                                                              | 0.95                                                                              | 0.95                                                                              |
| Adj. Flow (vph)         | 41                                                                                | 116                                                                               | 60                                                                                | 541                                                                               | 592                                                                               | 29                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 157                                                                               | 0                                                                                 | 60                                                                                | 541                                                                               | 621                                                                               | 0                                                                                 |
| Sign Control            | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 52.4% ICU Level of Service A

Analysis Period (min) 15

| Intersection             |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |      |
|--------------------------|-----------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 3.2                                                                               |        |                                                                                   |                                                                                   |                                                                                   |      |
| Movement                 | EBL                                                                               | EBR    | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |
| Lane Configurations      |  |        |  |  |  |      |
| Traffic Vol, veh/h       | 34                                                                                | 96     | 55                                                                                | 492                                                                               | 562                                                                               | 28   |
| Future Vol, veh/h        | 34                                                                                | 96     | 55                                                                                | 492                                                                               | 562                                                                               | 28   |
| Conflicting Peds, #/hr   | 0                                                                                 | 0      | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    |
| Sign Control             | Stop                                                                              | Stop   | Free                                                                              | Free                                                                              | Free                                                                              | Free |
| RT Channelized           | -                                                                                 | None   | -                                                                                 | None                                                                              | -                                                                                 | None |
| Storage Length           | 0                                                                                 | -      | 25                                                                                | -                                                                                 | -                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -      | -                                                                                 | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -      | -                                                                                 | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 83                                                                                | 83     | 91                                                                                | 91                                                                                | 95                                                                                | 95   |
| Heavy Vehicles, %        | 2                                                                                 | 2      | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2    |
| Mvmt Flow                | 41                                                                                | 116    | 60                                                                                | 541                                                                               | 592                                                                               | 29   |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |      |
| Major/Minor              | Minor2                                                                            | Major1 |                                                                                   | Major2                                                                            |                                                                                   |      |
| Conflicting Flow All     | 1268                                                                              | 607    | 621                                                                               | 0                                                                                 | -                                                                                 | 0    |
| Stage 1                  | 607                                                                               | -      | -                                                                                 | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 661                                                                               | -      | -                                                                                 | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy            | 6.42                                                                              | 6.22   | 4.12                                                                              | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy Stg 1      | 5.42                                                                              | -      | -                                                                                 | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy Stg 2      | 5.42                                                                              | -      | -                                                                                 | -                                                                                 | -                                                                                 | -    |
| Follow-up Hdwy           | 3.518                                                                             | 3.318  | 2.218                                                                             | -                                                                                 | -                                                                                 | -    |
| Pot Cap-1 Maneuver       | 186                                                                               | 496    | 960                                                                               | -                                                                                 | -                                                                                 | -    |
| Stage 1                  | 544                                                                               | -      | -                                                                                 | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 514                                                                               | -      | -                                                                                 | -                                                                                 | -                                                                                 | -    |
| Platoon blocked, %       |                                                                                   |        |                                                                                   | -                                                                                 | -                                                                                 | -    |
| Mov Cap-1 Maneuver       | 174                                                                               | 496    | 960                                                                               | -                                                                                 | -                                                                                 | -    |
| Mov Cap-2 Maneuver       | 174                                                                               | -      | -                                                                                 | -                                                                                 | -                                                                                 | -    |
| Stage 1                  | 510                                                                               | -      | -                                                                                 | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 514                                                                               | -      | -                                                                                 | -                                                                                 | -                                                                                 | -    |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |      |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |      |
| Approach                 | EB                                                                                | NB     |                                                                                   | SB                                                                                |                                                                                   |      |
| HCM Control Delay, s     | 24.9                                                                              | 0.9    |                                                                                   | 0                                                                                 |                                                                                   |      |
| HCM LOS                  | C                                                                                 |        |                                                                                   |                                                                                   |                                                                                   |      |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |      |
| Minor Lane/Major Mvmt    | NBL                                                                               | NBT    | EBLn1                                                                             | SBT                                                                               | SBR                                                                               |      |
| Capacity (veh/h)         | 960                                                                               | -      | 334                                                                               | -                                                                                 | -                                                                                 |      |
| HCM Lane V/C Ratio       | 0.063                                                                             | -      | 0.469                                                                             | -                                                                                 | -                                                                                 |      |
| HCM Control Delay (s)    | 9                                                                                 | -      | 24.9                                                                              | -                                                                                 | -                                                                                 |      |
| HCM Lane LOS             | A                                                                                 | -      | C                                                                                 | -                                                                                 | -                                                                                 |      |
| HCM 95th %tile O(veh)    | 0.2                                                                               | -      | 2.4                                                                               | -                                                                                 | -                                                                                 |      |

203: Moritz Place & Route 58 (Black Rock Turnpike)  
Lanes, Volumes, Timings

2040 Improved Concept A  
Timing Plan: Weekday PM Peak

|                         | →    | ↘    | ↙    | ←    | ↖    | ↗     |
|-------------------------|------|------|------|------|------|-------|
| Lane Group              | EBT  | EBR  | WBL  | WBT  | NBL  | NBR   |
| Lane Configurations     | ↰    |      |      | ↱    |      | ↱     |
| Traffic Volume (vph)    | 1101 | 3    | 0    | 877  | 0    | 11    |
| Future Volume (vph)     | 1101 | 3    | 0    | 877  | 0    | 11    |
| Ideal Flow (vphpl)      | 1900 | 1900 | 1900 | 1900 | 1900 | 1900  |
| Lane Util. Factor       | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  |
| Frt                     |      |      |      |      |      | 0.865 |
| Flt Protected           |      |      |      |      |      |       |
| Satd. Flow (prot)       | 1863 | 0    | 0    | 1863 | 0    | 1611  |
| Flt Permitted           |      |      |      |      |      |       |
| Satd. Flow (perm)       | 1863 | 0    | 0    | 1863 | 0    | 1611  |
| Link Speed (mph)        | 30   |      |      | 30   | 30   |       |
| Link Distance (ft)      | 187  |      |      | 131  | 186  |       |
| Travel Time (s)         | 4.3  |      |      | 3.0  | 4.2  |       |
| Peak Hour Factor        | 0.97 | 0.97 | 0.92 | 0.92 | 0.80 | 0.80  |
| Adj. Flow (vph)         | 1135 | 3    | 0    | 953  | 0    | 14    |
| Shared Lane Traffic (%) |      |      |      |      |      |       |
| Lane Group Flow (vph)   | 1138 | 0    | 0    | 953  | 0    | 14    |
| Sign Control            | Free |      |      | Free | Stop |       |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 68.1% ICU Level of Service C

Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.1

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↔    |      |      | ↑    |      | ↗    |
| Traffic Vol, veh/h       | 1101 | 3    | 0    | 877  | 0    | 11   |
| Future Vol, veh/h        | 1101 | 3    | 0    | 877  | 0    | 11   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | 0    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 97   | 97   | 92   | 92   | 80   | 80   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 1135 | 3    | 0    | 953  | 0    | 14   |

| Major/Minor          | Major1 | Major2 | Minor1      |
|----------------------|--------|--------|-------------|
| Conflicting Flow All | 0      | 0      | - - - 1137  |
| Stage 1              | -      | -      | - - -       |
| Stage 2              | -      | -      | - - -       |
| Critical Hdwy        | -      | -      | - - - 6.22  |
| Critical Hdwy Stg 1  | -      | -      | - - -       |
| Critical Hdwy Stg 2  | -      | -      | - - -       |
| Follow-up Hdwy       | -      | -      | - - - 3.318 |
| Pot Cap-1 Maneuver   | -      | -      | 0 - 0 246   |
| Stage 1              | -      | -      | 0 - 0 -     |
| Stage 2              | -      | -      | 0 - 0 -     |
| Platoon blocked, %   | -      | -      | -           |
| Mov Cap-1 Maneuver   | -      | -      | - - - 246   |
| Mov Cap-2 Maneuver   | -      | -      | - - -       |
| Stage 1              | -      | -      | - - -       |
| Stage 2              | -      | -      | - - -       |

| Approach             | EB | WB | NB   |
|----------------------|----|----|------|
| HCM Control Delay, s | 0  | 0  | 20.5 |
| HCM LOS              |    |    | C    |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h)      | 246   | -   | -   | -   |
| HCM Lane V/C Ratio    | 0.056 | -   | -   | -   |
| HCM Control Delay (s) | 20.5  | -   | -   | -   |
| HCM Lane LOS          | C     | -   | -   | -   |
| HCM 95th %tile Q(veh) | 0.2   | -   | -   | -   |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Talbot Drive Concept A Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 6                                                                                 | 1                                                                                 | 2                                                                                 | 75                                                                                | 1                                                                                 | 111                                                                               | 2                                                                                  | 820                                                                                 | 77                                                                                  | 71                                                                                  | 895                                                                                 | 8                                                                                   |
| Future Volume (vph)     | 6                                                                                 | 1                                                                                 | 2                                                                                 | 75                                                                                | 1                                                                                 | 111                                                                               | 2                                                                                  | 820                                                                                 | 77                                                                                  | 71                                                                                  | 895                                                                                 | 8                                                                                   |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                 | 13                                                                                  | 12                                                                                  | 12                                                                                  | 13                                                                                  | 12                                                                                  |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.966                                                                             |                                                                                   |                                                                                   | 0.920                                                                             |                                                                                   |                                                                                    | 0.988                                                                               |                                                                                     |                                                                                     | 0.999                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.968                                                                             |                                                                                   |                                                                                   | 0.980                                                                             |                                                                                   |                                                                                    | 0.999                                                                               |                                                                                     |                                                                                     | 0.996                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 1974                                                                              | 0                                                                                 | 0                                                                                 | 1903                                                                              | 0                                                                                 | 0                                                                                  | 1902                                                                                | 0                                                                                   | 0                                                                                   | 1915                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.721                                                                             |                                                                                   |                                                                                   | 0.864                                                                             |                                                                                   |                                                                                    | 0.999                                                                               |                                                                                     |                                                                                     | 0.874                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 1470                                                                              | 0                                                                                 | 0                                                                                 | 1678                                                                              | 0                                                                                 | 0                                                                                  | 1900                                                                                | 0                                                                                   | 0                                                                                   | 1681                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 3                                                                                 |                                                                                   |                                                                                   | 77                                                                                |                                                                                   |                                                                                    | 15                                                                                  |                                                                                     |                                                                                     | 1                                                                                   |                                                                                     |
| Link Speed (mph)        |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 35                                                                                  |                                                                                     |                                                                                     | 35                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 378                                                                               |                                                                                   |                                                                                   | 442                                                                               |                                                                                   |                                                                                    | 1898                                                                                |                                                                                     |                                                                                     | 522                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 10.3                                                                              |                                                                                   |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                    | 37.0                                                                                |                                                                                     |                                                                                     | 10.2                                                                                |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.94                                                                               | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                |
| Adj. Flow (vph)         | 8                                                                                 | 1                                                                                 | 3                                                                                 | 94                                                                                | 1                                                                                 | 139                                                                               | 2                                                                                  | 872                                                                                 | 82                                                                                  | 76                                                                                  | 952                                                                                 | 9                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 12                                                                                | 0                                                                                 | 0                                                                                 | 234                                                                               | 0                                                                                 | 0                                                                                  | 956                                                                                 | 0                                                                                   | 0                                                                                   | 1037                                                                                | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                    | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Permitted Phases        | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   | 2                                                                                  |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 4                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |                                                                                   | 2                                                                                  | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 15.0                                                                               | 15.0                                                                                |                                                                                     | 15.0                                                                                | 15.0                                                                                |                                                                                     |
| Minimum Split (s)       | 11.7                                                                              | 11.7                                                                              |                                                                                   | 11.7                                                                              | 11.7                                                                              |                                                                                   | 20.6                                                                               | 20.6                                                                                |                                                                                     | 20.6                                                                                | 20.6                                                                                |                                                                                     |
| Total Split (s)         | 16.6                                                                              | 16.6                                                                              |                                                                                   | 16.6                                                                              | 16.6                                                                              |                                                                                   | 63.4                                                                               | 63.4                                                                                |                                                                                     | 63.4                                                                                | 63.4                                                                                |                                                                                     |
| Total Split (%)         | 20.8%                                                                             | 20.8%                                                                             |                                                                                   | 20.8%                                                                             | 20.8%                                                                             |                                                                                   | 79.3%                                                                              | 79.3%                                                                               |                                                                                     | 79.3%                                                                               | 79.3%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.3                                                                               | 3.3                                                                               |                                                                                   | 3.3                                                                               | 3.3                                                                               |                                                                                   | 4.0                                                                                | 4.0                                                                                 |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.4                                                                               | 1.4                                                                               |                                                                                   | 1.4                                                                               | 1.4                                                                               |                                                                                   | 1.6                                                                                | 1.6                                                                                 |                                                                                     | 1.6                                                                                 | 1.6                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                    | 5.6                                                                                 |                                                                                     |                                                                                     | 5.6                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              |                                                                                   | C-Min                                                                              | C-Min                                                                               |                                                                                     | C-Min                                                                               | C-Min                                                                               |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 10.8                                                                              |                                                                                   |                                                                                   | 10.8                                                                              |                                                                                   |                                                                                    | 58.9                                                                                |                                                                                     |                                                                                     | 58.9                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.14                                                                              |                                                                                   |                                                                                   | 0.14                                                                              |                                                                                   |                                                                                    | 0.74                                                                                |                                                                                     |                                                                                     | 0.74                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.06                                                                              |                                                                                   |                                                                                   | 0.80                                                                              |                                                                                   |                                                                                    | 0.68                                                                                |                                                                                     |                                                                                     | 0.84                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 26.6                                                                              |                                                                                   |                                                                                   | 43.3                                                                              |                                                                                   |                                                                                    | 9.0                                                                                 |                                                                                     |                                                                                     | 16.1                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 26.6                                                                              |                                                                                   |                                                                                   | 43.3                                                                              |                                                                                   |                                                                                    | 9.0                                                                                 |                                                                                     |                                                                                     | 16.1                                                                                |                                                                                     |
| LOS                     |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 26.6                                                                              |                                                                                   |                                                                                   | 43.3                                                                              |                                                                                   |                                                                                    | 9.0                                                                                 |                                                                                     |                                                                                     | 16.1                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 74                                                                                |                                                                                   |                                                                                    | 221                                                                                 |                                                                                     |                                                                                     | 324                                                                                 |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | #132                                                                              |                                                                                   |                                                                                    | 544                                                                                 |                                                                                     |                                                                                     | #683                                                                                |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 298                                                                               |                                                                                   |                                                                                   | 362                                                                               |                                                                                   |                                                                                    | 1818                                                                                |                                                                                     |                                                                                     | 442                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

Timing Plan: Saturday MIDDAY

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Base Capacity (vph)    |                                                                                   | 225                                                                               |                                                                                   |                                                                                   | 319                                                                               |                                                                                   |                                                                                    | 1407                                                                                |                                                                                     |                                                                                     | 1241                                                                                |                                                                                     |
| Starvation Cap Reductn |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   | 0.05                                                                              |                                                                                   |                                                                                   | 0.73                                                                              |                                                                                   |                                                                                    | 0.68                                                                                |                                                                                     |                                                                                     | 0.84                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 43 (54%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 15.9

Intersection LOS: B

Intersection Capacity Utilization 122.8%

ICU Level of Service H

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

|                                                                                            |                                                                                          |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø2 (R)   |  Ø4   |
| 63.4 s                                                                                     | 16.6 s                                                                                   |
|  Ø6 (R) |  Ø8 |
| 63.4 s                                                                                     | 16.6 s                                                                                   |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

## Lanes, Volumes, Timings

2040 Improved Concept A

Timing Plan: Saturday MIDDAY

| Lane Group              | EBL   | EBR   | NBL   | NBT   | SBT   | SBR   | Ø3   |
|-------------------------|-------|-------|-------|-------|-------|-------|------|
| Lane Configurations     |       |       |       |       |       |       |      |
| Traffic Volume (vph)    | 120   | 207   | 144   | 803   | 810   | 77    |      |
| Future Volume (vph)     | 120   | 207   | 144   | 803   | 810   | 77    |      |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  |      |
| Lane Width (ft)         | 10    | 10    | 11    | 11    | 12    | 12    |      |
| Storage Length (ft)     | 0     | 50    | 100   |       |       | 50    |      |
| Storage Lanes           | 1     | 1     | 1     |       |       | 1     |      |
| Taper Length (ft)       | 25    |       | 50    |       |       |       |      |
| Lane Util. Factor       | 1.00  | 1.00  | 1.00  | 0.95  | 1.00  | 1.00  |      |
| Frt                     |       | 0.850 |       |       |       | 0.850 |      |
| Flt Protected           | 0.950 |       | 0.950 |       |       |       |      |
| Satd. Flow (prot)       | 1652  | 1478  | 1711  | 3421  | 1863  | 1583  |      |
| Flt Permitted           | 0.950 |       | 0.111 |       |       |       |      |
| Satd. Flow (perm)       | 1652  | 1478  | 200   | 3421  | 1863  | 1583  |      |
| Right Turn on Red       |       | Yes   |       |       |       | Yes   |      |
| Satd. Flow (RTOR)       |       | 252   |       |       |       | 20    |      |
| Link Speed (mph)        | 25    |       |       | 30    | 35    |       |      |
| Link Distance (ft)      | 445   |       |       | 510   | 341   |       |      |
| Travel Time (s)         | 12.1  |       |       | 11.6  | 6.6   |       |      |
| Peak Hour Factor        | 0.82  | 0.82  | 0.98  | 0.98  | 0.90  | 0.90  |      |
| Adj. Flow (vph)         | 146   | 252   | 147   | 819   | 900   | 86    |      |
| Shared Lane Traffic (%) |       |       |       |       |       |       |      |
| Lane Group Flow (vph)   | 146   | 252   | 147   | 819   | 900   | 86    |      |
| Turn Type               | Prot  | Perm  | pm+pt | NA    | NA    | Perm  |      |
| Protected Phases        | 4     |       | 1     | 6     | 2     |       | 3    |
| Permitted Phases        |       | 4     | 6     |       |       | 2     |      |
| Detector Phase          | 4     | 4     | 1     | 6     | 2     | 2     |      |
| Switch Phase            |       |       |       |       |       |       |      |
| Minimum Initial (s)     | 9.0   | 9.0   | 5.0   | 15.0  | 15.0  | 15.0  | 7.0  |
| Minimum Split (s)       | 13.0  | 13.0  | 9.2   | 21.9  | 21.9  | 21.9  | 22.0 |
| Total Split (s)         | 13.0  | 13.0  | 9.2   | 45.0  | 35.8  | 35.8  | 22.0 |
| Total Split (%)         | 16.3% | 16.3% | 11.5% | 56.3% | 44.8% | 44.8% | 28%  |
| Yellow Time (s)         | 3.0   | 3.0   | 3.2   | 4.9   | 4.9   | 4.9   | 4.0  |
| All-Red Time (s)        | 1.0   | 1.0   | 1.0   | 2.0   | 2.0   | 2.0   | 0.0  |
| Lost Time Adjust (s)    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |      |
| Total Lost Time (s)     | 4.0   | 4.0   | 4.2   | 6.9   | 6.9   | 6.9   |      |
| Lead/Lag                | Lag   | Lag   | Lead  |       | Lag   | Lag   | Lead |
| Lead-Lag Optimize?      | Yes   | Yes   | Yes   |       | Yes   | Yes   | Yes  |
| Recall Mode             | None  | None  | None  | C-Min | C-Min | C-Min | None |
| Act Effect Green (s)    | 12.5  | 12.5  | 59.3  | 56.6  | 44.8  | 44.8  |      |
| Actuated g/C Ratio      | 0.16  | 0.16  | 0.74  | 0.71  | 0.56  | 0.56  |      |
| v/c Ratio               | 0.57  | 0.57  | 0.50  | 0.34  | 0.86  | 0.10  |      |
| Control Delay           | 39.7  | 9.6   | 15.3  | 7.5   | 20.5  | 4.5   |      |
| Queue Delay             | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |      |
| Total Delay             | 39.7  | 9.6   | 15.3  | 7.5   | 20.5  | 4.5   |      |
| LOS                     | D     | A     | B     | A     | C     | A     |      |
| Approach Delay          | 20.7  |       |       | 8.7   | 19.1  |       |      |
| Approach LOS            | C     |       |       | A     | B     |       |      |
| Queue Length 50th (ft)  | 68    | 0     | 24    | 50    | 298   | 4     |      |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive Lanes, Volumes, Timings

2040 Improved Concept A  
Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |    |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3 |
| Queue Length 95th (ft)  | 107                                                                               | 42                                                                                | 95                                                                                | 205                                                                               | m#671                                                                             | m10                                                                               |    |
| Internal Link Dist (ft) | 365                                                                               |                                                                                   |                                                                                   | 430                                                                               | 261                                                                               |                                                                                   |    |
| Turn Bay Length (ft)    |                                                                                   | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   | 50                                                                                |    |
| Base Capacity (vph)     | 257                                                                               | 442                                                                               | 292                                                                               | 2422                                                                              | 1043                                                                              | 895                                                                               |    |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |    |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |    |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |    |
| Reduced v/c Ratio       | 0.57                                                                              | 0.57                                                                              | 0.50                                                                              | 0.34                                                                              | 0.86                                                                              | 0.10                                                                              |    |

## Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow, Master Intersection

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 15.1

Intersection LOS: B

Intersection Capacity Utilization 70.7%

ICU Level of Service C

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

|                                                                                            |                                                                                            |                                                                                        |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø3 |  Ø4 |
| 9.2 s                                                                                      | 35.8 s                                                                                     | 22 s                                                                                   | 13 s                                                                                     |
|  Ø6 (R) |                                                                                            |                                                                                        |                                                                                          |
| 45 s                                                                                       |                                                                                            |                                                                                        |                                                                                          |

# 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Drive 2040 Improved Concept A Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |  |
| Traffic Volume (vph)    | 89                                                                                | 0                                                                                 | 59                                                                                | 3                                                                                 | 2                                                                                 | 41                                                                                | 54                                                                                 | 900                                                                                 | 1                                                                                   | 7                                                                                   | 952                                                                                 | 108                                                                                 |
| Future Volume (vph)     | 89                                                                                | 0                                                                                 | 59                                                                                | 3                                                                                 | 2                                                                                 | 41                                                                                | 54                                                                                 | 900                                                                                 | 1                                                                                   | 7                                                                                   | 952                                                                                 | 108                                                                                 |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                 | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 50                                                                                |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 200                                                                                 |                                                                                     | 0                                                                                   |
| Storage Lanes           | 1                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 50                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 50                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                               | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Frt                     |                                                                                   | 0.875                                                                             |                                                                                   |                                                                                   | 0.880                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.985                                                                               |                                                                                     |
| Flt Protected           | 0.950                                                                             | 0.992                                                                             |                                                                                   |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                    | 0.997                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1905                                                                              | 1536                                                                              | 0                                                                                 | 0                                                                                 | 1850                                                                              | 0                                                                                 | 0                                                                                  | 3529                                                                                | 0                                                                                   | 0                                                                                   | 3486                                                                                | 0                                                                                   |
| Flt Permitted           | 0.950                                                                             | 0.992                                                                             |                                                                                   |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                    | 0.821                                                                               |                                                                                     |                                                                                     | 0.949                                                                               |                                                                                     |
| Satd. Flow (perm)       | 1905                                                                              | 1536                                                                              | 0                                                                                 | 0                                                                                 | 1850                                                                              | 0                                                                                 | 0                                                                                  | 2906                                                                                | 0                                                                                   | 0                                                                                   | 3308                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 168                                                                               |                                                                                   |                                                                                   | 48                                                                                |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 23                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 347                                                                               |                                                                                   |                                                                                   | 133                                                                               |                                                                                   |                                                                                    | 293                                                                                 |                                                                                     |                                                                                     | 336                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.5                                                                               |                                                                                   |                                                                                   | 3.6                                                                               |                                                                                   |                                                                                    | 6.7                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.83                                                                              | 0.83                                                                              | 0.83                                                                              | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 0.98                                                                               | 0.98                                                                                | 0.98                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Adj. Flow (vph)         | 107                                                                               | 0                                                                                 | 71                                                                                | 4                                                                                 | 2                                                                                 | 48                                                                                | 55                                                                                 | 918                                                                                 | 1                                                                                   | 7                                                                                   | 992                                                                                 | 113                                                                                 |
| Shared Lane Traffic (%) | 13%                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 93                                                                                | 85                                                                                | 0                                                                                 | 0                                                                                 | 54                                                                                | 0                                                                                 | 0                                                                                  | 974                                                                                 | 0                                                                                   | 0                                                                                   | 1112                                                                                | 0                                                                                   |
| Turn Type               | Split                                                                             | NA                                                                                |                                                                                   | Split                                                                             | NA                                                                                |                                                                                   | pm+pt                                                                              | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        | 4                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 2                                                                                  |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 4                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                                | 15.0                                                                                |                                                                                     | 15.0                                                                                | 15.0                                                                                |                                                                                     |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              |                                                                                   | 9.0                                                                               | 9.0                                                                               |                                                                                   | 10.9                                                                               | 20.4                                                                                |                                                                                     | 20.4                                                                                | 20.4                                                                                |                                                                                     |
| Total Split (s)         | 13.0                                                                              | 13.0                                                                              |                                                                                   | 9.0                                                                               | 9.0                                                                               |                                                                                   | 10.9                                                                               | 58.0                                                                                |                                                                                     | 47.1                                                                                | 47.1                                                                                |                                                                                     |
| Total Split (%)         | 16.3%                                                                             | 16.3%                                                                             |                                                                                   | 11.3%                                                                             | 11.3%                                                                             |                                                                                   | 13.6%                                                                              | 72.5%                                                                               |                                                                                     | 58.9%                                                                               | 58.9%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 4.2                                                                                | 4.2                                                                                 |                                                                                     | 4.2                                                                                 | 4.2                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               |                                                                                   | 1.0                                                                               | 1.0                                                                               |                                                                                   | 1.7                                                                                | 1.2                                                                                 |                                                                                     | 1.2                                                                                 | 1.2                                                                                 |                                                                                     |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                    | 5.4                                                                                 |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Lag                                                                                |                                                                                     |                                                                                     | Lead                                                                                | Lead                                                                                |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Yes                                                                                |                                                                                     |                                                                                     | Yes                                                                                 | Yes                                                                                 |                                                                                     |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              |                                                                                   | None                                                                               | C-Min                                                                               |                                                                                     | C-Min                                                                               | C-Min                                                                               |                                                                                     |
| Act Effct Green (s)     | 9.7                                                                               | 9.7                                                                               |                                                                                   |                                                                                   | 6.5                                                                               |                                                                                   |                                                                                    | 58.0                                                                                |                                                                                     |                                                                                     | 58.0                                                                                |                                                                                     |
| Actuated g/C Ratio      | 0.12                                                                              | 0.12                                                                              |                                                                                   |                                                                                   | 0.08                                                                              |                                                                                   |                                                                                    | 0.72                                                                                |                                                                                     |                                                                                     | 0.72                                                                                |                                                                                     |
| v/c Ratio               | 0.40                                                                              | 0.26                                                                              |                                                                                   |                                                                                   | 0.28                                                                              |                                                                                   |                                                                                    | 0.46                                                                                |                                                                                     |                                                                                     | 0.46                                                                                |                                                                                     |
| Control Delay           | 37.9                                                                              | 1.8                                                                               |                                                                                   |                                                                                   | 16.4                                                                              |                                                                                   |                                                                                    | 2.0                                                                                 |                                                                                     |                                                                                     | 3.9                                                                                 |                                                                                     |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             | 37.9                                                                              | 1.8                                                                               |                                                                                   |                                                                                   | 16.4                                                                              |                                                                                   |                                                                                    | 2.0                                                                                 |                                                                                     |                                                                                     | 3.9                                                                                 |                                                                                     |
| LOS                     | D                                                                                 | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 20.7                                                                              |                                                                                   |                                                                                   | 16.4                                                                              |                                                                                   |                                                                                    | 2.0                                                                                 |                                                                                     |                                                                                     | 3.9                                                                                 |                                                                                     |
| Approach LOS            |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Queue Length 50th (ft)  | 46                                                                                | 0                                                                                 |                                                                                   |                                                                                   | 3                                                                                 |                                                                                   |                                                                                    | 46                                                                                  |                                                                                     |                                                                                     | 63                                                                                  |                                                                                     |

# 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Driveway 2040 Improved Concept A Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  | 82                                                                                | 0                                                                                 |                                                                                   |                                                                                   | 32                                                                                |                                                                                   |                                                                                    | 37                                                                                  |                                                                                     |                                                                                     | m47                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 267                                                                               |                                                                                   |                                                                                   | 53                                                                                |                                                                                   |                                                                                    | 213                                                                                 |                                                                                     |                                                                                     | 256                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 230                                                                               | 332                                                                               |                                                                                   |                                                                                   | 194                                                                               |                                                                                   |                                                                                    | 2175                                                                                |                                                                                     |                                                                                     | 2404                                                                                |                                                                                     |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 42                                                                                  |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 15                                                                                  |                                                                                     |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       | 0.40                                                                              | 0.26                                                                              |                                                                                   |                                                                                   | 0.28                                                                              |                                                                                   |                                                                                    | 0.46                                                                                |                                                                                     |                                                                                     | 0.47                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 24 (30%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.46

Intersection Signal Delay: 4.7

Intersection LOS: A

Intersection Capacity Utilization 79.7%

ICU Level of Service D

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Driveway

|                                                                                            |                                                                                          |                                                                                          |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø2 (R) |  Ø4 |  Ø8 |
| 58 s                                                                                       | 13 s                                                                                     | 9 s                                                                                      |
|  Ø6 (R) |  Ø5   |                                                                                          |
| 47.1 s                                                                                     | 10.9 s                                                                                   |                                                                                          |

104: Route 58 (Black Rock Turnpike) & Fairfield Woods Road  
Lanes, Volumes, Timings

2040 Improved Concept A  
Timing Plan: Saturday MIDDAY

| Lane Group              | WBL   | WBR   | NBT   | NBR  | SBL   | SBT   |
|-------------------------|-------|-------|-------|------|-------|-------|
| Lane Configurations     |       |       |       |      |       |       |
| Traffic Volume (vph)    | 110   | 131   | 871   | 94   | 108   | 924   |
| Future Volume (vph)     | 110   | 131   | 871   | 94   | 108   | 924   |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900  | 1900 | 1900  | 1900  |
| Lane Width (ft)         | 12    | 11    | 11    | 12   | 12    | 11    |
| Storage Length (ft)     | 0     | 75    |       | 0    | 0     |       |
| Storage Lanes           | 1     | 1     |       | 0    | 1     |       |
| Taper Length (ft)       | 25    |       |       |      | 25    |       |
| Lane Util. Factor       | 1.00  | 1.00  | 0.95  | 0.95 | 1.00  | 1.00  |
| Frt                     |       | 0.850 | 0.985 |      |       |       |
| Flt Protected           | 0.950 |       |       |      | 0.950 |       |
| Satd. Flow (prot)       | 1770  | 1531  | 3370  | 0    | 1770  | 1801  |
| Flt Permitted           | 0.950 |       |       |      | 0.240 |       |
| Satd. Flow (perm)       | 1770  | 1531  | 3370  | 0    | 447   | 1801  |
| Right Turn on Red       |       | No    |       | Yes  |       |       |
| Satd. Flow (RTOR)       |       |       | 22    |      |       |       |
| Link Speed (mph)        | 25    |       | 30    |      |       | 30    |
| Link Distance (ft)      | 499   |       | 535   |      |       | 293   |
| Travel Time (s)         | 13.6  |       | 12.2  |      |       | 6.7   |
| Peak Hour Factor        | 0.80  | 0.80  | 0.97  | 0.97 | 0.96  | 0.96  |
| Adj. Flow (vph)         | 138   | 164   | 898   | 97   | 113   | 963   |
| Shared Lane Traffic (%) |       |       |       |      |       |       |
| Lane Group Flow (vph)   | 138   | 164   | 995   | 0    | 113   | 963   |
| Turn Type               | Prot  | Perm  | NA    |      | pm+pt | NA    |
| Protected Phases        | 4     |       | 2     |      | 1     | 6     |
| Permitted Phases        |       | 4     |       |      | 6     |       |
| Detector Phase          | 4     | 4     | 2     |      | 1     | 6     |
| Switch Phase            |       |       |       |      |       |       |
| Minimum Initial (s)     | 9.0   | 9.0   | 15.0  |      | 5.0   | 15.0  |
| Minimum Split (s)       | 13.0  | 13.0  | 20.3  |      | 11.5  | 20.3  |
| Total Split (s)         | 19.0  | 19.0  | 48.4  |      | 12.6  | 61.0  |
| Total Split (%)         | 23.8% | 23.8% | 60.5% |      | 15.8% | 76.3% |
| Yellow Time (s)         | 3.0   | 3.0   | 4.3   |      | 4.3   | 4.3   |
| All-Red Time (s)        | 1.0   | 1.0   | 1.0   |      | 2.2   | 1.0   |
| Lost Time Adjust (s)    | 0.0   | 0.0   | 0.0   |      | 0.0   | 0.0   |
| Total Lost Time (s)     | 4.0   | 4.0   | 5.3   |      | 6.5   | 5.3   |
| Lead/Lag                |       |       | Lead  |      | Lag   |       |
| Lead-Lag Optimize?      |       |       | Yes   |      | Yes   |       |
| Recall Mode             | None  | None  | C-Min |      | None  | C-Min |
| Act Effect Green (s)    | 12.5  | 12.5  | 47.2  |      | 58.0  | 58.2  |
| Actuated g/C Ratio      | 0.16  | 0.16  | 0.59  |      | 0.72  | 0.73  |
| v/c Ratio               | 0.50  | 0.69  | 0.50  |      | 0.26  | 0.74  |
| Control Delay           | 36.8  | 46.7  | 12.0  |      | 2.0   | 5.4   |
| Queue Delay             | 0.0   | 0.0   | 0.0   |      | 0.0   | 0.2   |
| Total Delay             | 36.8  | 46.7  | 12.0  |      | 2.0   | 5.6   |
| LOS                     | D     | D     | B     |      | A     | A     |
| Approach Delay          | 42.2  |       | 12.0  |      |       | 5.3   |
| Approach LOS            | D     |       | B     |      |       | A     |
| Queue Length 50th (ft)  | 64    | 78    | 138   |      | 4     | 24    |



# 104: Route 58 (Black Rock Turnpike) & Fairfield Woods Road Lanes, Volumes, Timings

2040 Improved Concept A  
Timing Plan: Saturday MIDDAY

|                         | ↙    | ↖    | ↑    | ↗   | ↘    | ↓    |
|-------------------------|------|------|------|-----|------|------|
| Lane Group              | WBL  | WBR  | NBT  | NBR | SBL  | SBT  |
| Queue Length 95th (ft)  | 100  | 119  | 232  |     | 3    | 57   |
| Internal Link Dist (ft) | 419  |      | 455  |     |      | 213  |
| Turn Bay Length (ft)    |      | 75   |      |     |      |      |
| Base Capacity (vph)     | 332  | 287  | 2054 |     | 451  | 1310 |
| Starvation Cap Reductn  | 0    | 0    | 0    |     | 0    | 40   |
| Spillback Cap Reductn   | 0    | 0    | 0    |     | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    |     | 0    | 0    |
| Reduced v/c Ratio       | 0.42 | 0.57 | 0.48 |     | 0.25 | 0.76 |

## Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 20 (25%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 12.8

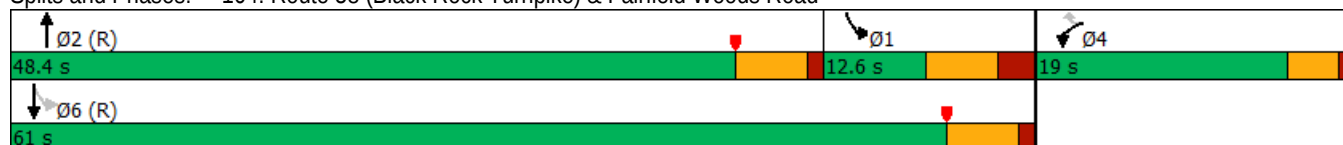
Intersection LOS: B

Intersection Capacity Utilization 63.9%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Fairfield Woods Road



# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Improved Concept A Lanes, Volumes, Timings

Timing Plan: Saturday Midday

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (vph)    | 86                                                                                | 679                                                                               | 171                                                                               | 142                                                                               | 657                                                                               | 160                                                                               | 233                                                                                 | 210                                                                                 | 157                                                                                 | 254                                                                                 | 275                                                                                 | 61                                                                                  |
| Future Volume (vph)     | 86                                                                                | 679                                                                               | 171                                                                               | 142                                                                               | 657                                                                               | 160                                                                               | 233                                                                                 | 210                                                                                 | 157                                                                                 | 254                                                                                 | 275                                                                                 | 61                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 11                                                                                | 11                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                  | 11                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 200                                                                               |                                                                                   | 325                                                                               | 200                                                                               |                                                                                   | 0                                                                                 | 400                                                                                 |                                                                                     | 75                                                                                  | 170                                                                                 |                                                                                     | 75                                                                                  |
| Storage Lanes           | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                   |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)       | 85                                                                                |                                                                                   |                                                                                   | 50                                                                                |                                                                                   |                                                                                   | 100                                                                                 |                                                                                     |                                                                                     | 100                                                                                 |                                                                                     |                                                                                     |
| Lane Util. Factor       | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.970                                                                             |                                                                                   |                                                                                   | 0.971                                                                             |                                                                                   |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1711                                                                              | 3319                                                                              | 0                                                                                 | 1711                                                                              | 3437                                                                              | 0                                                                                 | 1711                                                                                | 1801                                                                                | 1583                                                                                | 1770                                                                                | 1863                                                                                | 1583                                                                                |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.325                                                                               |                                                                                     |                                                                                     | 0.411                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 1711                                                                              | 3319                                                                              | 0                                                                                 | 1711                                                                              | 3437                                                                              | 0                                                                                 | 585                                                                                 | 1801                                                                                | 1583                                                                                | 766                                                                                 | 1863                                                                                | 1583                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | No                                                                                  |
| Satd. Flow (RTOR)       |                                                                                   | 21                                                                                |                                                                                   |                                                                                   | 21                                                                                |                                                                                   |                                                                                     |                                                                                     | 125                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 628                                                                               |                                                                                   |                                                                                   | 408                                                                               |                                                                                   |                                                                                     | 637                                                                                 |                                                                                     |                                                                                     | 355                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 14.3                                                                              |                                                                                   |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                     | 14.5                                                                                |                                                                                     |                                                                                     | 9.7                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                |
| Adj. Flow (vph)         | 96                                                                                | 754                                                                               | 190                                                                               | 156                                                                               | 722                                                                               | 176                                                                               | 259                                                                                 | 233                                                                                 | 174                                                                                 | 289                                                                                 | 313                                                                                 | 69                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 96                                                                                | 944                                                                               | 0                                                                                 | 156                                                                               | 898                                                                               | 0                                                                                 | 259                                                                                 | 233                                                                                 | 174                                                                                 | 289                                                                                 | 313                                                                                 | 69                                                                                  |
| Turn Type               | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | NA                                                                                |                                                                                   | pm+pt                                                                               | NA                                                                                  | Perm                                                                                | pm+pt                                                                               | NA                                                                                  | Perm                                                                                |
| Protected Phases        | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 7                                                                                   | 4                                                                                   |                                                                                     | 3                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   | 8                                                                                   |                                                                                     | 8                                                                                   |
| Detector Phase          | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 7                                                                                   | 4                                                                                   | 4                                                                                   | 3                                                                                   | 8                                                                                   | 8                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 15.0                                                                              |                                                                                   | 5.0                                                                               | 15.0                                                                              |                                                                                   | 5.0                                                                                 | 10.0                                                                                | 10.0                                                                                | 5.0                                                                                 | 10.0                                                                                | 10.0                                                                                |
| Minimum Split (s)       | 9.7                                                                               | 21.6                                                                              |                                                                                   | 9.7                                                                               | 21.6                                                                              |                                                                                   | 9.3                                                                                 | 16.8                                                                                | 16.8                                                                                | 9.3                                                                                 | 16.8                                                                                | 16.8                                                                                |
| Total Split (s)         | 14.0                                                                              | 43.9                                                                              |                                                                                   | 17.9                                                                              | 47.8                                                                              |                                                                                   | 18.0                                                                                | 30.5                                                                                | 30.5                                                                                | 19.7                                                                                | 32.2                                                                                | 32.2                                                                                |
| Total Split (%)         | 9.7%                                                                              | 30.3%                                                                             |                                                                                   | 12.3%                                                                             | 33.0%                                                                             |                                                                                   | 12.4%                                                                               | 21.0%                                                                               | 21.0%                                                                               | 13.6%                                                                               | 22.2%                                                                               | 22.2%                                                                               |
| Yellow Time (s)         | 3.0                                                                               | 4.1                                                                               |                                                                                   | 3.0                                                                               | 4.1                                                                               |                                                                                   | 3.3                                                                                 | 4.4                                                                                 | 4.4                                                                                 | 3.3                                                                                 | 4.4                                                                                 | 4.4                                                                                 |
| All-Red Time (s)        | 1.7                                                                               | 2.5                                                                               |                                                                                   | 1.7                                                                               | 2.5                                                                               |                                                                                   | 1.0                                                                                 | 2.4                                                                                 | 2.4                                                                                 | 1.0                                                                                 | 2.4                                                                                 | 2.4                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 4.7                                                                               | 6.6                                                                               |                                                                                   | 4.7                                                                               | 6.6                                                                               |                                                                                   | 4.3                                                                                 | 6.8                                                                                 | 6.8                                                                                 | 4.3                                                                                 | 6.8                                                                                 | 6.8                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode             | None                                                                              | Min                                                                               |                                                                                   | None                                                                              | Min                                                                               |                                                                                   | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Act Effct Green (s)     | 9.3                                                                               | 37.3                                                                              |                                                                                   | 13.2                                                                              | 41.2                                                                              |                                                                                   | 38.8                                                                                | 22.6                                                                                | 22.6                                                                                | 42.2                                                                                | 24.3                                                                                | 24.3                                                                                |
| Actuated g/C Ratio      | 0.08                                                                              | 0.34                                                                              |                                                                                   | 0.12                                                                              | 0.37                                                                              |                                                                                   | 0.35                                                                                | 0.20                                                                                | 0.20                                                                                | 0.38                                                                                | 0.22                                                                                | 0.22                                                                                |
| v/c Ratio               | 0.67                                                                              | 0.84                                                                              |                                                                                   | 0.77                                                                              | 0.70                                                                              |                                                                                   | 0.75                                                                                | 0.63                                                                                | 0.41                                                                                | 0.67                                                                                | 0.77                                                                                | 0.20                                                                                |
| Control Delay           | 73.1                                                                              | 41.2                                                                              |                                                                                   | 72.6                                                                              | 32.5                                                                              |                                                                                   | 39.5                                                                                | 49.0                                                                                | 15.6                                                                                | 32.5                                                                                | 54.2                                                                                | 36.9                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 73.1                                                                              | 41.2                                                                              |                                                                                   | 72.6                                                                              | 32.5                                                                              |                                                                                   | 39.5                                                                                | 49.0                                                                                | 15.6                                                                                | 32.5                                                                                | 54.2                                                                                | 36.9                                                                                |
| LOS                     | E                                                                                 | D                                                                                 |                                                                                   | E                                                                                 | C                                                                                 |                                                                                   | D                                                                                   | D                                                                                   | B                                                                                   | C                                                                                   | D                                                                                   | D                                                                                   |
| Approach Delay          |                                                                                   | 44.2                                                                              |                                                                                   |                                                                                   | 38.4                                                                              |                                                                                   |                                                                                     | 36.6                                                                                |                                                                                     |                                                                                     | 43.1                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Queue Length 50th (ft)  | 68                                                                                | 323                                                                               |                                                                                   | 111                                                                               | 280                                                                               |                                                                                   | 127                                                                                 | 153                                                                                 | 29                                                                                  | 144                                                                                 | 211                                                                                 | 40                                                                                  |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Improved Concept A Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |      |
|-------------------------|------|
| Lane Group              | Ø9   |
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 33.0 |
| Total Split (s)         | 33.0 |
| Total Split (%)         | 23%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Improved Concept A Lanes, Volumes, Timings

Timing Plan: Saturday Midday

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  | #146                                                                              | 408                                                                               |                                                                                   | #216                                                                              | 355                                                                               |                                                                                   | #215                                                                               | 238                                                                                 | 91                                                                                  | 212                                                                                 | 304                                                                                 | 78                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 548                                                                               |                                                                                   |                                                                                   | 328                                                                               |                                                                                   |                                                                                    | 557                                                                                 |                                                                                     |                                                                                     | 275                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 200                                                                               |                                                                                   |                                                                                   | 200                                                                               |                                                                                   |                                                                                   | 400                                                                                |                                                                                     | 75                                                                                  | 170                                                                                 |                                                                                     | 75                                                                                  |
| Base Capacity (vph)     | 143                                                                               | 1130                                                                              |                                                                                   | 203                                                                               | 1290                                                                              |                                                                                   | 344                                                                                | 385                                                                                 | 436                                                                                 | 431                                                                                 | 426                                                                                 | 362                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.67                                                                              | 0.84                                                                              |                                                                                   | 0.77                                                                              | 0.70                                                                              |                                                                                   | 0.75                                                                               | 0.61                                                                                | 0.40                                                                                | 0.67                                                                                | 0.73                                                                                | 0.19                                                                                |

## Intersection Summary

Area Type: Other

Cycle Length: 145

Actuated Cycle Length: 110.9

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 40.7

Intersection LOS: D

Intersection Capacity Utilization 78.1%

ICU Level of Service D

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)

|                                                                                        |                                                                                        |                                                                                        |                                                                                          |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø9 |  Ø3 |  Ø4 |
| 17.9 s                                                                                 | 43.9 s                                                                                 | 33 s                                                                                   | 19.7 s                                                                                   | 30.5 s                                                                                   |
|  Ø5 |  Ø6 |                                                                                        |  Ø7 |  Ø8 |
| 14 s                                                                                   | 47.8 s                                                                                 |                                                                                        | 18 s                                                                                     | 32.2 s                                                                                   |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø9 |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |

106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & 2040 Interchange (Black Rock Turnpike)  
 Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |  |  |                                                                                   |                                                                                    |                                                                                     |  |                                                                                     |                                                                                     |  |
| Traffic Volume (vph)    | 94                                                                                | 846                                                                               | 48                                                                                | 100                                                                               | 977                                                                               | 118                                                                               | 0                                                                                  | 0                                                                                   | 329                                                                                 | 0                                                                                   | 0                                                                                   | 41                                                                                  |
| Future Volume (vph)     | 94                                                                                | 846                                                                               | 48                                                                                | 100                                                                               | 977                                                                               | 118                                                                               | 0                                                                                  | 0                                                                                   | 329                                                                                 | 0                                                                                   | 0                                                                                   | 41                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                 | 13                                                                                  | 13                                                                                  | 12                                                                                  | 13                                                                                  | 13                                                                                  |
| Storage Length (ft)     | 65                                                                                |                                                                                   | 0                                                                                 | 100                                                                               |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 25                                                                                  | 0                                                                                   |                                                                                     | 25                                                                                  |
| Storage Lanes           | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 50                                                                                |                                                                                   |                                                                                   | 50                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.992                                                                             |                                                                                   |                                                                                   | 0.984                                                                             |                                                                                   |                                                                                    |                                                                                     | 0.865                                                                               |                                                                                     |                                                                                     | 0.865                                                                               |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1770                                                                              | 3394                                                                              | 0                                                                                 | 1770                                                                              | 1772                                                                              | 0                                                                                 | 0                                                                                  | 0                                                                                   | 1665                                                                                | 0                                                                                   | 0                                                                                   | 1665                                                                                |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 1770                                                                              | 3394                                                                              | 0                                                                                 | 1770                                                                              | 1772                                                                              | 0                                                                                 | 0                                                                                  | 0                                                                                   | 1665                                                                                | 0                                                                                   | 0                                                                                   | 1665                                                                                |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 401                                                                               |                                                                                   |                                                                                   | 502                                                                               |                                                                                   |                                                                                    | 114                                                                                 |                                                                                     |                                                                                     | 133                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.1                                                                               |                                                                                   |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                    | 3.1                                                                                 |                                                                                     |                                                                                     | 3.6                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.81                                                                                | 0.81                                                                                | 0.81                                                                                |
| Adj. Flow (vph)         | 98                                                                                | 881                                                                               | 50                                                                                | 105                                                                               | 1028                                                                              | 124                                                                               | 0                                                                                  | 0                                                                                   | 358                                                                                 | 0                                                                                   | 0                                                                                   | 51                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 98                                                                                | 931                                                                               | 0                                                                                 | 105                                                                               | 1152                                                                              | 0                                                                                 | 0                                                                                  | 0                                                                                   | 358                                                                                 | 0                                                                                   | 0                                                                                   | 51                                                                                  |
| Sign Control            |                                                                                   | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              |                                                                                   |                                                                                    | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 70.5% ICU Level of Service C

Analysis Period (min) 15



106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & 2040-50 (Black Rock Turnpike)  
 HCM 2010 TWSC

Timing Plan: Saturday MIDDAY

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 4.4  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      | ↰    | ↱↰   |      | ↰    | ↱    |      |      |      | ↰    |      |      | ↰    |
| Traffic Vol, veh/h       | 94   | 846  | 48   | 100  | 977  | 118  | 0    | 0    | 329  | 0    | 0    | 41   |
| Future Vol, veh/h        | 94   | 846  | 48   | 100  | 977  | 118  | 0    | 0    | 329  | 0    | 0    | 41   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | 65   | -    | -    | 100  | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 96   | 96   | 96   | 95   | 95   | 95   | 92   | 92   | 92   | 81   | 81   | 81   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 98   | 881  | 50   | 105  | 1028 | 124  | 0    | 0    | 358  | 0    | 0    | 51   |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |   |       | Minor2 |   |       |
|----------------------|--------|---|---|--------|---|---|--------|---|-------|--------|---|-------|
| Conflicting Flow All | 1152   | 0 | 0 | 931    | 0 | 0 | -      | - | 466   | -      | - | 1090  |
| Stage 1              | -      | - | - | -      | - | - | -      | - | -     | -      | - | -     |
| Stage 2              | -      | - | - | -      | - | - | -      | - | -     | -      | - | -     |
| Critical Hdwy        | 4.13   | - | - | 4.13   | - | - | -      | - | 6.93  | -      | - | 6.23  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | -      | - | -     | -      | - | -     |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | -      | - | -     | -      | - | -     |
| Follow-up Hdwy       | 2.219  | - | - | 2.219  | - | - | -      | - | 3.319 | -      | - | 3.319 |
| Pot Cap-1 Maneuver   | 604    | - | - | 733    | - | - | 0      | 0 | 544   | 0      | 0 | 261   |
| Stage 1              | -      | - | - | -      | - | - | 0      | 0 | -     | 0      | 0 | -     |
| Stage 2              | -      | - | - | -      | - | - | 0      | 0 | -     | 0      | 0 | -     |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | - | -     | -      | - | -     |
| Mov Cap-1 Maneuver   | 604    | - | - | 733    | - | - | -      | - | 544   | -      | - | 261   |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | -      | - | -     | -      | - | -     |
| Stage 1              | -      | - | - | -      | - | - | -      | - | -     | -      | - | -     |
| Stage 2              | -      | - | - | -      | - | - | -      | - | -     | -      | - | -     |

| Approach             | EB  |  |  | WB  |  |  | NB   |  |  | SB   |  |  |
|----------------------|-----|--|--|-----|--|--|------|--|--|------|--|--|
| HCM Control Delay, s | 1.2 |  |  | 0.9 |  |  | 23.4 |  |  | 22.1 |  |  |
| HCM LOS              |     |  |  |     |  |  | C    |  |  | C    |  |  |

| Minor Lane/Major Mvmt | NBLn1 | EBL   | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 544   | 604   | -   | -   | 733   | -   | -   | 261   |
| HCM Lane V/C Ratio    | 0.657 | 0.162 | -   | -   | 0.144 | -   | -   | 0.194 |
| HCM Control Delay (s) | 23.4  | 12.1  | -   | -   | 10.7  | -   | -   | 22.1  |
| HCM Lane LOS          | C     | B     | -   | -   | B     | -   | -   | C     |
| HCM 95th %tile Q(veh) | 4.8   | 0.6   | -   | -   | 0.5   | -   | -   | 0.7   |

## 108: Burroughs Road &amp; Route 58 (Black Rock Turnpike)

## 2040 Improved Concept A

## Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |                                                                                   |  |  |                                                                                   |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (vph)    | 80                                                                                | 874                                                                               | 15                                                                                | 0                                                                                 | 865                                                                               | 112                                                                               | 20                                                                                | 64                                                                                  | 10                                                                                  | 126                                                                                 | 52                                                                                  | 65                                                                                  |
| Future Volume (vph)     | 80                                                                                | 874                                                                               | 15                                                                                | 0                                                                                 | 865                                                                               | 112                                                                               | 20                                                                                | 64                                                                                  | 10                                                                                  | 126                                                                                 | 52                                                                                  | 65                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 16                                                                                  | 12                                                                                  | 12                                                                                  | 16                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 65                                                                                |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 130                                                                               | 0                                                                                 |                                                                                     | 0                                                                                   | 125                                                                                 |                                                                                     | 0                                                                                   |
| Storage Lanes           | 1                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 1                                                                                 | 0                                                                                 |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 50                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                     |                                                                                     | 50                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   | 0.986                                                                               |                                                                                     |                                                                                     | 0.917                                                                               |                                                                                     |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.989                                                                               |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1770                                                                              | 3414                                                                              | 0                                                                                 | 0                                                                                 | 1801                                                                              | 1583                                                                              | 0                                                                                 | 2059                                                                                | 0                                                                                   | 1770                                                                                | 1936                                                                                | 0                                                                                   |
| Flt Permitted           | 0.202                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.890                                                                               |                                                                                     | 0.904                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 376                                                                               | 3414                                                                              | 0                                                                                 | 0                                                                                 | 1801                                                                              | 1583                                                                              | 0                                                                                 | 1853                                                                                | 0                                                                                   | 1684                                                                                | 1936                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   |                                                                                   | 118                                                                               |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     | 70                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 407                                                                               |                                                                                   |                                                                                   | 390                                                                               |                                                                                   |                                                                                   | 466                                                                                 |                                                                                     |                                                                                     | 265                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                   | 8.9                                                                               |                                                                                   |                                                                                   | 12.7                                                                                |                                                                                     |                                                                                     | 7.2                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.88                                                                              | 0.88                                                                                | 0.88                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Adj. Flow (vph)         | 87                                                                                | 950                                                                               | 16                                                                                | 0                                                                                 | 911                                                                               | 118                                                                               | 23                                                                                | 73                                                                                  | 11                                                                                  | 135                                                                                 | 56                                                                                  | 70                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 87                                                                                | 966                                                                               | 0                                                                                 | 0                                                                                 | 911                                                                               | 118                                                                               | 0                                                                                 | 107                                                                                 | 0                                                                                   | 135                                                                                 | 126                                                                                 | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   |                                                                                   | NA                                                                                | Perm                                                                              | Perm                                                                              | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 2                                                                                 | 4                                                                                 |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 6                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 | 2                                                                                 | 4                                                                                 | 4                                                                                   |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 15.0                                                                              | 15.0                                                                              |                                                                                   |                                                                                   | 15.0                                                                              | 15.0                                                                              | 9.0                                                                               | 9.0                                                                                 |                                                                                     | 9.0                                                                                 | 9.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 20.6                                                                              | 20.6                                                                              |                                                                                   |                                                                                   | 20.6                                                                              | 20.6                                                                              | 14.4                                                                              | 14.4                                                                                |                                                                                     | 14.4                                                                                | 14.4                                                                                |                                                                                     |
| Total Split (s)         | 45.0                                                                              | 45.0                                                                              |                                                                                   |                                                                                   | 45.0                                                                              | 45.0                                                                              | 15.0                                                                              | 15.0                                                                                |                                                                                     | 15.0                                                                                | 15.0                                                                                |                                                                                     |
| Total Split (%)         | 75.0%                                                                             | 75.0%                                                                             |                                                                                   |                                                                                   | 75.0%                                                                             | 75.0%                                                                             | 25.0%                                                                             | 25.0%                                                                               |                                                                                     | 25.0%                                                                               | 25.0%                                                                               |                                                                                     |
| Yellow Time (s)         | 4.1                                                                               | 4.1                                                                               |                                                                                   |                                                                                   | 4.1                                                                               | 4.1                                                                               | 3.1                                                                               | 3.1                                                                                 |                                                                                     | 3.1                                                                                 | 3.1                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.5                                                                               | 1.5                                                                               |                                                                                   |                                                                                   | 1.5                                                                               | 1.5                                                                               | 2.3                                                                               | 2.3                                                                                 |                                                                                     | 2.3                                                                                 | 2.3                                                                                 |                                                                                     |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     | 5.6                                                                               | 5.6                                                                               |                                                                                   |                                                                                   | 5.6                                                                               | 5.6                                                                               |                                                                                   | 5.4                                                                                 |                                                                                     | 5.4                                                                                 | 5.4                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | Min                                                                               | Min                                                                               |                                                                                   |                                                                                   | Min                                                                               | Min                                                                               | None                                                                              | None                                                                                |                                                                                     | None                                                                                | None                                                                                |                                                                                     |
| Act Effct Green (s)     | 35.1                                                                              | 35.1                                                                              |                                                                                   |                                                                                   | 35.1                                                                              | 35.1                                                                              |                                                                                   | 9.6                                                                                 |                                                                                     | 9.6                                                                                 | 9.6                                                                                 |                                                                                     |
| Actuated g/C Ratio      | 0.70                                                                              | 0.70                                                                              |                                                                                   |                                                                                   | 0.70                                                                              | 0.70                                                                              |                                                                                   | 0.19                                                                                |                                                                                     | 0.19                                                                                | 0.19                                                                                |                                                                                     |
| v/c Ratio               | 0.33                                                                              | 0.41                                                                              |                                                                                   |                                                                                   | 0.73                                                                              | 0.10                                                                              |                                                                                   | 0.30                                                                                |                                                                                     | 0.42                                                                                | 0.30                                                                                |                                                                                     |
| Control Delay           | 9.2                                                                               | 5.3                                                                               |                                                                                   |                                                                                   | 11.7                                                                              | 1.2                                                                               |                                                                                   | 22.4                                                                                |                                                                                     | 26.2                                                                                | 13.7                                                                                |                                                                                     |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Delay             | 9.2                                                                               | 5.3                                                                               |                                                                                   |                                                                                   | 11.7                                                                              | 1.2                                                                               |                                                                                   | 22.4                                                                                |                                                                                     | 26.2                                                                                | 13.7                                                                                |                                                                                     |
| LOS                     | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 | A                                                                                 |                                                                                   | C                                                                                   |                                                                                     | C                                                                                   | B                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   | 10.5                                                                              |                                                                                   |                                                                                   | 22.4                                                                                |                                                                                     |                                                                                     | 20.2                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Queue Length 50th (ft)  | 11                                                                                | 68                                                                                |                                                                                   |                                                                                   | 180                                                                               | 0                                                                                 |                                                                                   | 27                                                                                  |                                                                                     | 38                                                                                  | 15                                                                                  |                                                                                     |

108: Burroughs Road & Route 58 (Black Rock Turnpike)  
Lanes, Volumes, Timings

2040 Improved Concept A  
Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  | 37                                                                                | 101                                                                               |                                                                                   |                                                                                   | 336                                                                               | 12                                                                                |                                                                                    | 70                                                                                  |                                                                                     | 93                                                                                  | 58                                                                                  |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 327                                                                               |                                                                                   |                                                                                   | 310                                                                               |                                                                                   |                                                                                    | 386                                                                                 |                                                                                     |                                                                                     | 185                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 65                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 130                                                                               |                                                                                    |                                                                                     |                                                                                     | 125                                                                                 |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 297                                                                               | 2705                                                                              |                                                                                   |                                                                                   | 1426                                                                              | 1278                                                                              |                                                                                    | 373                                                                                 |                                                                                     | 333                                                                                 | 439                                                                                 |                                                                                     |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       | 0.29                                                                              | 0.36                                                                              |                                                                                   |                                                                                   | 0.64                                                                              | 0.09                                                                              |                                                                                    | 0.29                                                                                |                                                                                     | 0.41                                                                                | 0.29                                                                                |                                                                                     |

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 50.4

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 9.9

Intersection LOS: A

Intersection Capacity Utilization 85.5%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)

|                                                                                        |  |                                                                                          |
|----------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------|
|  Ø2   |  |  Ø4   |
| 45 s                                                                                   |  | 15 s                                                                                     |
|  Ø6 |  |  Ø8 |
| 45 s                                                                                   |  | 15 s                                                                                     |

201: Tunxis Hill Road & Route 58 (Tunxis Hill Cutoff)  
Lanes, Volumes, Timings

2040 Improved Concept A  
Timing Plan: Saturday MIDDAY

|                         |                                                                                    |  |  |  |  |  |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBT                                                                                                                                                                 | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations     |   |                                                                                   |                                                                                   |  |  |  |
| Traffic Volume (vph)    | 486                                                                                                                                                                 | 11                                                                                | 41                                                                                | 519                                                                               | 5                                                                                 | 57                                                                                |
| Future Volume (vph)     | 486                                                                                                                                                                 | 11                                                                                | 41                                                                                | 519                                                                               | 5                                                                                 | 57                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                                                                                                                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 11                                                                                                                                                                  | 12                                                                                | 12                                                                                | 11                                                                                | 10                                                                                | 10                                                                                |
| Storage Length (ft)     |                                                                                                                                                                     | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 50                                                                                |
| Storage Lanes           |                                                                                                                                                                     | 0                                                                                 | 0                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |
| Taper Length (ft)       |                                                                                                                                                                     |                                                                                   | 25                                                                                |                                                                                   | 25                                                                                |                                                                                   |
| Lane Util. Factor       | 0.95                                                                                                                                                                | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.997                                                                                                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |
| Flt Protected           |                                                                                                                                                                     |                                                                                   |                                                                                   | 0.996                                                                             | 0.950                                                                             |                                                                                   |
| Satd. Flow (prot)       | 3411                                                                                                                                                                | 0                                                                                 | 0                                                                                 | 1793                                                                              | 1652                                                                              | 1478                                                                              |
| Flt Permitted           |                                                                                                                                                                     |                                                                                   |                                                                                   | 0.996                                                                             | 0.950                                                                             |                                                                                   |
| Satd. Flow (perm)       | 3411                                                                                                                                                                | 0                                                                                 | 0                                                                                 | 1793                                                                              | 1652                                                                              | 1478                                                                              |
| Link Speed (mph)        | 30                                                                                                                                                                  |                                                                                   |                                                                                   | 30                                                                                | 25                                                                                |                                                                                   |
| Link Distance (ft)      | 1095                                                                                                                                                                |                                                                                   |                                                                                   | 214                                                                               | 782                                                                               |                                                                                   |
| Travel Time (s)         | 24.9                                                                                                                                                                |                                                                                   |                                                                                   | 4.9                                                                               | 21.3                                                                              |                                                                                   |
| Peak Hour Factor        | 0.88                                                                                                                                                                | 0.88                                                                              | 0.90                                                                              | 0.90                                                                              | 0.80                                                                              | 0.80                                                                              |
| Adj. Flow (vph)         | 552                                                                                                                                                                 | 13                                                                                | 46                                                                                | 577                                                                               | 6                                                                                 | 71                                                                                |
| Shared Lane Traffic (%) |                                                                                                                                                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 565                                                                                                                                                                 | 0                                                                                 | 0                                                                                 | 623                                                                               | 6                                                                                 | 71                                                                                |
| Sign Control            | Free                                                                                                                                                                |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 56.7% ICU Level of Service B

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↑↑   |      |      | ↑    | ↑    | ↑    |
| Traffic Vol, veh/h       | 486  | 11   | 41   | 519  | 5    | 57   |
| Future Vol, veh/h        | 486  | 11   | 41   | 519  | 5    | 57   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | 0    | 50   |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 88   | 88   | 90   | 90   | 80   | 80   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 552  | 13   | 46   | 577  | 6    | 71   |

| Major/Minor          | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0      | 0      | 565    |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Critical Hdwy        | -      | -      | 4.13   |
| Critical Hdwy Stg 1  | -      | -      | -      |
| Critical Hdwy Stg 2  | -      | -      | -      |
| Follow-up Hdwy       | -      | -      | 2.219  |
| Pot Cap-1 Maneuver   | -      | -      | 1005   |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | -      | -      | 1005   |
| Mov Cap-2 Maneuver   | -      | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |

| Approach             | EB | WB  | NB   |
|----------------------|----|-----|------|
| HCM Control Delay, s | 0  | 0.6 | 11.9 |
| HCM LOS              |    |     | B    |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | 171   | 715   | -   | -   | 1005  | -   |
| HCM Lane V/C Ratio    | 0.037 | 0.1   | -   | -   | 0.045 | -   |
| HCM Control Delay (s) | 26.9  | 10.6  | -   | -   | 8.8   | 0   |
| HCM Lane LOS          | D     | B     | -   | -   | A     | A   |
| HCM 95th %tile Q(veh) | 0.1   | 0.3   | -   | -   | 0.1   | -   |

202: Route 732 (Black Rock Turnpike) & Judd Street  
Lanes, Volumes, Timings

2040 Improved Concept A  
Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations     |  |                                                                                   |  |  |  |                                                                                   |
| Traffic Volume (vph)    | 22                                                                                | 74                                                                                | 53                                                                                | 495                                                                               | 599                                                                               | 38                                                                                |
| Future Volume (vph)     | 22                                                                                | 74                                                                                | 53                                                                                | 495                                                                               | 599                                                                               | 38                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Storage Length (ft)     | 0                                                                                 | 0                                                                                 | 25                                                                                |                                                                                   |                                                                                   | 0                                                                                 |
| Storage Lanes           | 1                                                                                 | 0                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.896                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.992                                                                             |                                                                                   |
| Flt Protected           | 0.989                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1871                                                                              | 0                                                                                 | 1770                                                                              | 1863                                                                              | 1848                                                                              | 0                                                                                 |
| Flt Permitted           | 0.989                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1871                                                                              | 0                                                                                 | 1770                                                                              | 1863                                                                              | 1848                                                                              | 0                                                                                 |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 586                                                                               |                                                                                   |                                                                                   | 395                                                                               | 218                                                                               |                                                                                   |
| Travel Time (s)         | 16.0                                                                              |                                                                                   |                                                                                   | 9.0                                                                               | 5.0                                                                               |                                                                                   |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.98                                                                              | 0.98                                                                              | 0.93                                                                              | 0.93                                                                              |
| Adj. Flow (vph)         | 28                                                                                | 93                                                                                | 54                                                                                | 505                                                                               | 644                                                                               | 41                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 121                                                                               | 0                                                                                 | 54                                                                                | 505                                                                               | 685                                                                               | 0                                                                                 |
| Sign Control            | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 52.9% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 2.3

| Movement                 | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Configurations      |  |  |  |  |  |  |
| Traffic Vol, veh/h       | 22                                                                                | 74                                                                                | 53                                                                                | 495                                                                               | 599                                                                               | 38                                                                                |
| Future Vol, veh/h        | 22                                                                                | 74                                                                                | 53                                                                                | 495                                                                               | 599                                                                               | 38                                                                                |
| Conflicting Peds, #/hr   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop                                                                              | Free                                                                              | Free                                                                              | Free                                                                              | Free                                                                              |
| RT Channelized           | -                                                                                 | None                                                                              | -                                                                                 | None                                                                              | -                                                                                 | None                                                                              |
| Storage Length           | 0                                                                                 | -                                                                                 | 25                                                                                | -                                                                                 | -                                                                                 | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -                                                                                 | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                 |
| Grade, %                 | 0                                                                                 | -                                                                                 | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                 |
| Peak Hour Factor         | 80                                                                                | 80                                                                                | 98                                                                                | 98                                                                                | 93                                                                                | 93                                                                                |
| Heavy Vehicles, %        | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |
| Mvmt Flow                | 28                                                                                | 93                                                                                | 54                                                                                | 505                                                                               | 644                                                                               | 41                                                                                |

| Major/Minor          | Minor2 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 1278   | 665    | 685    |
| Stage 1              | 665    | -      | -      |
| Stage 2              | 613    | -      | -      |
| Critical Hdwy        | 6.42   | 6.22   | 4.12   |
| Critical Hdwy Stg 1  | 5.42   | -      | -      |
| Critical Hdwy Stg 2  | 5.42   | -      | -      |
| Follow-up Hdwy       | 3.518  | 3.318  | 2.218  |
| Pot Cap-1 Maneuver   | 183    | 460    | 908    |
| Stage 1              | 511    | -      | -      |
| Stage 2              | 541    | -      | -      |
| Platoon blocked, %   |        |        |        |
| Mov Cap-1 Maneuver   | 172    | 460    | 908    |
| Mov Cap-2 Maneuver   | 172    | -      | -      |
| Stage 1              | 481    | -      | -      |
| Stage 2              | 541    | -      | -      |

| Approach             | EB   | NB  | SB |
|----------------------|------|-----|----|
| HCM Control Delay, s | 21.9 | 0.9 | 0  |
| HCM LOS              | C    |     |    |

| Minor Lane/Major Mvmt | NBL  | NBT | EBLn1 | SBT | SBR |
|-----------------------|------|-----|-------|-----|-----|
| Capacity (veh/h)      | 908  | -   | 332   | -   | -   |
| HCM Lane V/C Ratio    | 0.06 | -   | 0.361 | -   | -   |
| HCM Control Delay (s) | 9.2  | -   | 21.9  | -   | -   |
| HCM Lane LOS          | A    | -   | C     | -   | -   |
| HCM 95th %tile Q(veh) | 0.2  | -   | 1.6   | -   | -   |



203: Moritz Place & Route 58 (Black Rock Turnpike)  
Lanes, Volumes, Timings

2040 Improved Concept A  
Timing Plan: Saturday MIDDAY

|                                   |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group                        | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations               |  |                                                                                   |                                                                                   |  |                                                                                   |  |
| Traffic Volume (vph)              | 987                                                                               | 5                                                                                 | 0                                                                                 | 963                                                                               | 0                                                                                 | 14                                                                                |
| Future Volume (vph)               | 987                                                                               | 5                                                                                 | 0                                                                                 | 963                                                                               | 0                                                                                 | 14                                                                                |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                               | 0.999                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.865                                                                             |
| Flt Protected                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (prot)                 | 1861                                                                              | 0                                                                                 | 0                                                                                 | 1863                                                                              | 0                                                                                 | 1611                                                                              |
| Flt Permitted                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (perm)                 | 1861                                                                              | 0                                                                                 | 0                                                                                 | 1863                                                                              | 0                                                                                 | 1611                                                                              |
| Link Speed (mph)                  | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)                | 187                                                                               |                                                                                   |                                                                                   | 131                                                                               | 186                                                                               |                                                                                   |
| Travel Time (s)                   | 4.3                                                                               |                                                                                   |                                                                                   | 3.0                                                                               | 4.2                                                                               |                                                                                   |
| Peak Hour Factor                  | 0.94                                                                              | 0.94                                                                              | 0.95                                                                              | 0.95                                                                              | 0.80                                                                              | 0.80                                                                              |
| Adj. Flow (vph)                   | 1050                                                                              | 5                                                                                 | 0                                                                                 | 1014                                                                              | 0                                                                                 | 18                                                                                |
| Shared Lane Traffic (%)           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)             | 1055                                                                              | 0                                                                                 | 0                                                                                 | 1014                                                                              | 0                                                                                 | 18                                                                                |
| Sign Control                      | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Area Type:                        | Other                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Control Type:                     | Unsignalized                                                                      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization | 62.3%                                                                             |                                                                                   |                                                                                   | ICU Level of Service B                                                            |                                                                                   |                                                                                   |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

Intersection

Int Delay, s/veh 0.2

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↔    |      |      | ↑    |      | ↗    |
| Traffic Vol, veh/h       | 987  | 5    | 0    | 963  | 0    | 14   |
| Future Vol, veh/h        | 987  | 5    | 0    | 963  | 0    | 14   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | 0    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 94   | 94   | 95   | 95   | 80   | 80   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 1050 | 5    | 0    | 1014 | 0    | 18   |

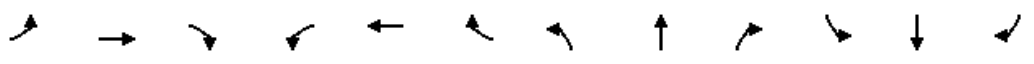
| Major/Minor          | Major1 | Major2 | Minor1      |
|----------------------|--------|--------|-------------|
| Conflicting Flow All | 0      | 0      | - - - 1053  |
| Stage 1              | -      | -      | - - -       |
| Stage 2              | -      | -      | - - -       |
| Critical Hdwy        | -      | -      | - - - 6.22  |
| Critical Hdwy Stg 1  | -      | -      | - - -       |
| Critical Hdwy Stg 2  | -      | -      | - - -       |
| Follow-up Hdwy       | -      | -      | - - - 3.318 |
| Pot Cap-1 Maneuver   | -      | -      | 0 - 0 275   |
| Stage 1              | -      | -      | 0 - 0       |
| Stage 2              | -      | -      | 0 - 0       |
| Platoon blocked, %   | -      | -      | -           |
| Mov Cap-1 Maneuver   | -      | -      | - - - 275   |
| Mov Cap-2 Maneuver   | -      | -      | - - -       |
| Stage 1              | -      | -      | - - -       |
| Stage 2              | -      | -      | - - -       |

| Approach             | EB | WB | NB |
|----------------------|----|----|----|
| HCM Control Delay, s | 0  | 0  | 19 |
| HCM LOS              |    |    | C  |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h)      | 275   | -   | -   | -   |
| HCM Lane V/C Ratio    | 0.064 | -   | -   | -   |
| HCM Control Delay (s) | 19    | -   | -   | -   |
| HCM Lane LOS          | C     | -   | -   | -   |
| HCM 95th %tile Q(veh) | 0.2   | -   | -   | -   |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Talbot Drive Concept B Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |       |      |       |       |      |       |       |      |       |       |      |
|-------------------------|------------------------------------------------------------------------------------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|
| Lane Group              | EBL                                                                                | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
| Lane Configurations     |                                                                                    | ↔     |      |       | ↔     |      |       | ↔     |      |       | ↔     |      |
| Traffic Volume (vph)    | 11                                                                                 | 1     | 3    | 204   | 0     | 167  | 2     | 680   | 26   | 65    | 643   | 4    |
| Future Volume (vph)     | 11                                                                                 | 1     | 3    | 204   | 0     | 167  | 2     | 680   | 26   | 65    | 643   | 4    |
| Ideal Flow (vphpl)      | 1900                                                                               | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12                                                                                 | 16    | 12   | 12    | 16    | 12   | 12    | 13    | 12   | 12    | 13    | 12   |
| Lane Util. Factor       | 1.00                                                                               | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 |
| Frt                     |                                                                                    | 0.972 |      |       | 0.939 |      |       | 0.995 |      |       | 0.999 |      |
| Flt Protected           |                                                                                    | 0.964 |      |       | 0.973 |      |       |       |      |       | 0.995 |      |
| Satd. Flow (prot)       | 0                                                                                  | 1959  | 0    | 0     | 1910  | 0    | 0     | 1897  | 0    | 0     | 1895  | 0    |
| Flt Permitted           |                                                                                    | 0.778 |      |       | 0.818 |      |       | 0.999 |      |       | 0.881 |      |
| Satd. Flow (perm)       | 0                                                                                  | 1581  | 0    | 0     | 1606  | 0    | 0     | 1895  | 0    | 0     | 1678  | 0    |
| Right Turn on Red       |                                                                                    |       | Yes  |       |       | Yes  |       |       | Yes  |       |       | Yes  |
| Satd. Flow (RTOR)       |                                                                                    | 4     |      |       | 44    |      |       | 3     |      |       |       |      |
| Link Speed (mph)        |                                                                                    | 25    |      |       | 30    |      |       | 35    |      |       | 35    |      |
| Link Distance (ft)      |                                                                                    | 378   |      |       | 442   |      |       | 1898  |      |       | 522   |      |
| Travel Time (s)         |                                                                                    | 10.3  |      |       | 10.0  |      |       | 37.0  |      |       | 10.2  |      |
| Peak Hour Factor        | 0.80                                                                               | 0.80  | 0.80 | 0.84  | 0.84  | 0.84 | 0.94  | 0.94  | 0.94 | 0.91  | 0.91  | 0.91 |
| Heavy Vehicles (%)      | 3%                                                                                 | 3%    | 3%   | 3%    | 3%    | 3%   | 3%    | 3%    | 3%   | 3%    | 3%    | 3%   |
| Adj. Flow (vph)         | 14                                                                                 | 1     | 4    | 243   | 0     | 199  | 2     | 723   | 28   | 71    | 707   | 4    |
| Shared Lane Traffic (%) |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 0                                                                                  | 19    | 0    | 0     | 442   | 0    | 0     | 753   | 0    | 0     | 782   | 0    |
| Turn Type               | Perm                                                                               | NA    |      | Perm  | NA    |      | Perm  | NA    |      | Perm  | NA    |      |
| Protected Phases        |                                                                                    | 4     |      |       | 8     |      |       | 2     |      |       | 6     |      |
| Permitted Phases        | 4                                                                                  |       |      | 8     |       |      | 2     |       |      | 6     |       |      |
| Detector Phase          | 4                                                                                  | 4     |      | 8     | 8     |      | 2     | 2     |      | 6     | 6     |      |
| Switch Phase            |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Minimum Initial (s)     | 7.0                                                                                | 7.0   |      | 7.0   | 7.0   |      | 15.0  | 15.0  |      | 15.0  | 15.0  |      |
| Minimum Split (s)       | 11.7                                                                               | 11.7  |      | 11.7  | 11.7  |      | 20.6  | 20.6  |      | 20.6  | 20.6  |      |
| Total Split (s)         | 37.0                                                                               | 37.0  |      | 37.0  | 37.0  |      | 63.0  | 63.0  |      | 63.0  | 63.0  |      |
| Total Split (%)         | 37.0%                                                                              | 37.0% |      | 37.0% | 37.0% |      | 63.0% | 63.0% |      | 63.0% | 63.0% |      |
| Yellow Time (s)         | 3.3                                                                                | 3.3   |      | 3.3   | 3.3   |      | 4.0   | 4.0   |      | 4.0   | 4.0   |      |
| All-Red Time (s)        | 1.4                                                                                | 1.4   |      | 1.4   | 1.4   |      | 1.6   | 1.6   |      | 1.6   | 1.6   |      |
| Lost Time Adjust (s)    |                                                                                    | 0.0   |      |       | 0.0   |      |       | 0.0   |      |       | 0.0   |      |
| Total Lost Time (s)     |                                                                                    | 4.7   |      |       | 4.7   |      |       | 5.6   |      |       | 5.6   |      |
| Lead/Lag                |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Lead-Lag Optimize?      |                                                                                    |       |      |       |       |      |       |       |      |       |       |      |
| Recall Mode             | None                                                                               | None  |      | None  | None  |      | C-Min | C-Min |      | C-Min | C-Min |      |
| Act Effect Green (s)    |                                                                                    | 28.6  |      |       | 28.6  |      |       | 61.1  |      |       | 61.1  |      |
| Actuated g/C Ratio      |                                                                                    | 0.29  |      |       | 0.29  |      |       | 0.61  |      |       | 0.61  |      |
| v/c Ratio               |                                                                                    | 0.04  |      |       | 0.90  |      |       | 0.65  |      |       | 0.76  |      |
| Control Delay           |                                                                                    | 20.4  |      |       | 53.5  |      |       | 12.2  |      |       | 21.6  |      |
| Queue Delay             |                                                                                    | 0.0   |      |       | 0.0   |      |       | 0.0   |      |       | 0.0   |      |
| Total Delay             |                                                                                    | 20.4  |      |       | 53.5  |      |       | 12.2  |      |       | 21.6  |      |
| LOS                     |                                                                                    | C     |      |       | D     |      |       | B     |      |       | C     |      |
| Approach Delay          |                                                                                    | 20.4  |      |       | 53.5  |      |       | 12.2  |      |       | 21.6  |      |
| Approach LOS            |                                                                                    | C     |      |       | D     |      |       | B     |      |       | C     |      |
| Queue Length 50th (ft)  |                                                                                    | 7     |      |       | 239   |      |       | 232   |      |       | 357   |      |
| Queue Length 95th (ft)  |                                                                                    | 20    |      |       | 323   |      |       | 238   |      |       | 560   |      |
| Internal Link Dist (ft) |                                                                                    | 298   |      |       | 362   |      |       | 1818  |      |       | 442   |      |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

2040 Diverged Concept B

Timing Plan: Weekday AM Peak

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Turn Bay Length (ft)   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)    |                                                                                   | 513                                                                               |                                                                                   |                                                                                   | 548                                                                               |                                                                                   |                                                                                    | 1160                                                                                |                                                                                     |                                                                                     | 1026                                                                                |                                                                                     |
| Starvation Cap Reductn |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   | 0.04                                                                              |                                                                                   |                                                                                   | 0.81                                                                              |                                                                                   |                                                                                    | 0.65                                                                                |                                                                                     |                                                                                     | 0.76                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 95 (95%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 25.1

Intersection LOS: C

Intersection Capacity Utilization 110.9%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

|                                                                                           |                                                                                        |
|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
|  Ø2 (R)  |  Ø4  |
| 63 s                                                                                      | 37 s                                                                                   |
|  Ø6 (R) |  Ø8 |
| 63 s                                                                                      | 37 s                                                                                   |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

## Lanes, Volumes, Timings

2040 Improved Concept B

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |      |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3   |
| Lane Configurations     |  |  |  |  |  |  |      |
| Traffic Volume (vph)    | 54                                                                                | 136                                                                               | 366                                                                               | 739                                                                               | 622                                                                               | 198                                                                               |      |
| Future Volume (vph)     | 54                                                                                | 136                                                                               | 366                                                                               | 739                                                                               | 622                                                                               | 198                                                                               |      |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |      |
| Lane Width (ft)         | 10                                                                                | 10                                                                                | 11                                                                                | 11                                                                                | 12                                                                                | 12                                                                                |      |
| Storage Length (ft)     | 0                                                                                 | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   | 50                                                                                |      |
| Storage Lanes           | 1                                                                                 | 1                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 1                                                                                 |      |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |      |
| Frt                     |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |      |
| Flt Protected           | 0.950                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |      |
| Satd. Flow (prot)       | 1636                                                                              | 1463                                                                              | 1694                                                                              | 3388                                                                              | 1845                                                                              | 1568                                                                              |      |
| Flt Permitted           | 0.950                                                                             |                                                                                   | 0.193                                                                             |                                                                                   |                                                                                   |                                                                                   |      |
| Satd. Flow (perm)       | 1636                                                                              | 1463                                                                              | 344                                                                               | 3388                                                                              | 1845                                                                              | 1568                                                                              |      |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |      |
| Satd. Flow (RTOR)       |                                                                                   | 164                                                                               |                                                                                   |                                                                                   |                                                                                   | 54                                                                                |      |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 35                                                                                |                                                                                   |      |
| Link Distance (ft)      | 445                                                                               |                                                                                   |                                                                                   | 510                                                                               | 341                                                                               |                                                                                   |      |
| Travel Time (s)         | 12.1                                                                              |                                                                                   |                                                                                   | 11.6                                                                              | 6.6                                                                               |                                                                                   |      |
| Peak Hour Factor        | 0.83                                                                              | 0.83                                                                              | 0.91                                                                              | 0.91                                                                              | 0.94                                                                              | 0.94                                                                              |      |
| Heavy Vehicles (%)      | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                |      |
| Adj. Flow (vph)         | 65                                                                                | 164                                                                               | 402                                                                               | 812                                                                               | 662                                                                               | 211                                                                               |      |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Group Flow (vph)   | 65                                                                                | 164                                                                               | 402                                                                               | 812                                                                               | 662                                                                               | 211                                                                               |      |
| Turn Type               | Prot                                                                              | Perm                                                                              | pm+pt                                                                             | NA                                                                                | NA                                                                                | Perm                                                                              |      |
| Protected Phases        | 4                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 | 2                                                                                 |                                                                                   | 3    |
| Permitted Phases        |                                                                                   | 4                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |      |
| Detector Phase          | 4                                                                                 | 4                                                                                 | 1                                                                                 | 6                                                                                 | 2                                                                                 | 2                                                                                 |      |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               | 5.0                                                                               | 15.0                                                                              | 15.0                                                                              | 15.0                                                                              | 7.0  |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              | 9.2                                                                               | 21.9                                                                              | 21.9                                                                              | 21.9                                                                              | 22.0 |
| Total Split (s)         | 13.0                                                                              | 13.0                                                                              | 22.1                                                                              | 65.0                                                                              | 42.9                                                                              | 42.9                                                                              | 22.0 |
| Total Split (%)         | 13.0%                                                                             | 13.0%                                                                             | 22.1%                                                                             | 65.0%                                                                             | 42.9%                                                                             | 42.9%                                                                             | 22%  |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               | 3.2                                                                               | 4.9                                                                               | 4.9                                                                               | 4.9                                                                               | 4.0  |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 0.0  |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |      |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               | 4.2                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               |      |
| Lead/Lag                | Lag                                                                               | Lag                                                                               | Lead                                                                              |                                                                                   | Lag                                                                               | Lag                                                                               | Lead |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               | Yes  |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | C-Min                                                                             | C-Min                                                                             | C-Min                                                                             | None |
| Act Effect Green (s)    | 9.8                                                                               | 9.8                                                                               | 82.0                                                                              | 79.3                                                                              | 47.7                                                                              | 47.7                                                                              |      |
| Actuated g/C Ratio      | 0.10                                                                              | 0.10                                                                              | 0.82                                                                              | 0.79                                                                              | 0.48                                                                              | 0.48                                                                              |      |
| v/c Ratio               | 0.41                                                                              | 0.56                                                                              | 0.62                                                                              | 0.30                                                                              | 0.75                                                                              | 0.27                                                                              |      |
| Control Delay           | 50.0                                                                              | 14.8                                                                              | 11.9                                                                              | 1.8                                                                               | 26.1                                                                              | 13.7                                                                              |      |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |      |
| Total Delay             | 50.0                                                                              | 14.8                                                                              | 11.9                                                                              | 1.8                                                                               | 26.1                                                                              | 13.7                                                                              |      |
| LOS                     | D                                                                                 | B                                                                                 | B                                                                                 | A                                                                                 | C                                                                                 | B                                                                                 |      |
| Approach Delay          | 24.8                                                                              |                                                                                   |                                                                                   | 5.2                                                                               | 23.1                                                                              |                                                                                   |      |
| Approach LOS            | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 | C                                                                                 |                                                                                   |      |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive Lanes, Volumes, Timings

2040 Improved Concept B  
Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |    |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3 |
| Queue Length 50th (ft)  | 40                                                                                | 0                                                                                 | 84                                                                                | 2                                                                                 | 212                                                                               | 34                                                                                |    |
| Queue Length 95th (ft)  | 74                                                                                | 46                                                                                | 86                                                                                | 34                                                                                | m#561                                                                             | m98                                                                               |    |
| Internal Link Dist (ft) | 365                                                                               |                                                                                   |                                                                                   | 430                                                                               | 261                                                                               |                                                                                   |    |
| Turn Bay Length (ft)    |                                                                                   | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   | 50                                                                                |    |
| Base Capacity (vph)     | 160                                                                               | 291                                                                               | 652                                                                               | 2686                                                                              | 880                                                                               | 776                                                                               |    |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |    |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |    |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |    |
| Reduced v/c Ratio       | 0.41                                                                              | 0.56                                                                              | 0.62                                                                              | 0.30                                                                              | 0.75                                                                              | 0.27                                                                              |    |

## Intersection Summary

Area Type: Other  
Cycle Length: 100  
Actuated Cycle Length: 100  
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow, Master Intersection  
Natural Cycle: 100  
Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 0.75  
Intersection Signal Delay: 13.9  
Intersection Capacity Utilization 73.1%  
Analysis Period (min) 15  
# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.  
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

|                                                                                            |                                                                                            |                                                                                          |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø3 |  Ø4 |
| 22.1 s                                                                                     | 42.9 s                                                                                     | 22 s                                                                                     | 13 s                                                                                     |
|  Ø6 (R) |                                                                                            |                                                                                          |                                                                                          |
| 65 s                                                                                       |                                                                                            |                                                                                          |                                                                                          |

# 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Drive 2040 Improved Concept B Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 61                                                                                | 1                                                                                 | 15                                                                                | 3                                                                                 | 0                                                                                 | 48                                                                                | 59                                                                                 | 1051                                                                                | 0                                                                                   | 1                                                                                   | 586                                                                                 | 181                                                                                 |
| Future Volume (vph)     | 61                                                                                | 1                                                                                 | 15                                                                                | 3                                                                                 | 0                                                                                 | 48                                                                                | 59                                                                                 | 1051                                                                                | 0                                                                                   | 1                                                                                   | 586                                                                                 | 181                                                                                 |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                 | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 50                                                                                |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 200                                                                                 |                                                                                     | 0                                                                                   |
| Storage Lanes           | 1                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 50                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 50                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                               | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Frt                     |                                                                                   | 0.939                                                                             |                                                                                   |                                                                                   | 0.873                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.965                                                                               |                                                                                     |
| Flt Protected           | 0.950                                                                             | 0.972                                                                             |                                                                                   |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                    | 0.997                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1887                                                                              | 1599                                                                              | 0                                                                                 | 0                                                                                 | 1820                                                                              | 0                                                                                 | 0                                                                                  | 3494                                                                                | 0                                                                                   | 0                                                                                   | 3382                                                                                | 0                                                                                   |
| Flt Permitted           | 0.950                                                                             | 0.972                                                                             |                                                                                   |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                    | 0.837                                                                               |                                                                                     |                                                                                     | 0.954                                                                               |                                                                                     |
| Satd. Flow (perm)       | 1887                                                                              | 1599                                                                              | 0                                                                                 | 0                                                                                 | 1820                                                                              | 0                                                                                 | 0                                                                                  | 2934                                                                                | 0                                                                                   | 0                                                                                   | 3227                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 19                                                                                |                                                                                   |                                                                                   | 134                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 73                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 347                                                                               |                                                                                   |                                                                                   | 133                                                                               |                                                                                   |                                                                                    | 293                                                                                 |                                                                                     |                                                                                     | 336                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.5                                                                               |                                                                                   |                                                                                   | 3.6                                                                               |                                                                                   |                                                                                    | 6.7                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.90                                                                               | 0.90                                                                                | 0.90                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                |
| Heavy Vehicles (%)      | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                 | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  |
| Adj. Flow (vph)         | 76                                                                                | 1                                                                                 | 19                                                                                | 4                                                                                 | 0                                                                                 | 60                                                                                | 66                                                                                 | 1168                                                                                | 0                                                                                   | 1                                                                                   | 666                                                                                 | 206                                                                                 |
| Shared Lane Traffic (%) | 35%                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 49                                                                                | 47                                                                                | 0                                                                                 | 0                                                                                 | 64                                                                                | 0                                                                                 | 0                                                                                  | 1234                                                                                | 0                                                                                   | 0                                                                                   | 873                                                                                 | 0                                                                                   |
| Turn Type               | Split                                                                             | NA                                                                                |                                                                                   | Split                                                                             | NA                                                                                |                                                                                   | pm+pt                                                                              | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        | 4                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 2                                                                                  |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 4                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                                | 15.0                                                                                |                                                                                     | 15.0                                                                                | 15.0                                                                                |                                                                                     |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              |                                                                                   | 9.0                                                                               | 9.0                                                                               |                                                                                   | 10.9                                                                               | 20.4                                                                                |                                                                                     | 20.4                                                                                | 20.4                                                                                |                                                                                     |
| Total Split (s)         | 14.0                                                                              | 14.0                                                                              |                                                                                   | 10.0                                                                              | 10.0                                                                              |                                                                                   | 10.9                                                                               | 76.0                                                                                |                                                                                     | 65.1                                                                                | 65.1                                                                                |                                                                                     |
| Total Split (%)         | 14.0%                                                                             | 14.0%                                                                             |                                                                                   | 10.0%                                                                             | 10.0%                                                                             |                                                                                   | 10.9%                                                                              | 76.0%                                                                               |                                                                                     | 65.1%                                                                               | 65.1%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 4.2                                                                                | 4.2                                                                                 |                                                                                     | 4.2                                                                                 | 4.2                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               |                                                                                   | 1.0                                                                               | 1.0                                                                               |                                                                                   | 1.7                                                                                | 1.2                                                                                 |                                                                                     | 1.2                                                                                 | 1.2                                                                                 |                                                                                     |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                    | 5.4                                                                                 |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Lag                                                                                |                                                                                     |                                                                                     | Lead                                                                                | Lead                                                                                |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Yes                                                                                |                                                                                     |                                                                                     | Yes                                                                                 | Yes                                                                                 |                                                                                     |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              |                                                                                   | None                                                                               | C-Min                                                                               |                                                                                     | C-Min                                                                               | C-Min                                                                               |                                                                                     |
| Act Effect Green (s)    | 9.2                                                                               | 9.2                                                                               |                                                                                   |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                    | 77.4                                                                                |                                                                                     |                                                                                     | 77.4                                                                                |                                                                                     |
| Actuated g/C Ratio      | 0.09                                                                              | 0.09                                                                              |                                                                                   |                                                                                   | 0.06                                                                              |                                                                                   |                                                                                    | 0.77                                                                                |                                                                                     |                                                                                     | 0.77                                                                                |                                                                                     |
| v/c Ratio               | 0.28                                                                              | 0.29                                                                              |                                                                                   |                                                                                   | 0.28                                                                              |                                                                                   |                                                                                    | 0.54                                                                                |                                                                                     |                                                                                     | 0.35                                                                                |                                                                                     |
| Control Delay           | 46.9                                                                              | 33.6                                                                              |                                                                                   |                                                                                   | 3.1                                                                               |                                                                                   |                                                                                    | 4.6                                                                                 |                                                                                     |                                                                                     | 0.8                                                                                 |                                                                                     |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.4                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             | 46.9                                                                              | 33.6                                                                              |                                                                                   |                                                                                   | 3.1                                                                               |                                                                                   |                                                                                    | 5.1                                                                                 |                                                                                     |                                                                                     | 0.8                                                                                 |                                                                                     |
| LOS                     | D                                                                                 | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 40.4                                                                              |                                                                                   |                                                                                   | 3.1                                                                               |                                                                                   |                                                                                    | 5.1                                                                                 |                                                                                     |                                                                                     | 0.8                                                                                 |                                                                                     |
| Approach LOS            |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |



# 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Driveway Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  | 31                                                                                | 17                                                                                |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 111                                                                                 |                                                                                     |                                                                                     | 11                                                                                  |                                                                                     |
| Queue Length 95th (ft)  | 61                                                                                | 47                                                                                |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 130                                                                                 |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 267                                                                               |                                                                                   |                                                                                   | 53                                                                                |                                                                                   |                                                                                    | 213                                                                                 |                                                                                     |                                                                                     | 256                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 188                                                                               | 177                                                                               |                                                                                   |                                                                                   | 235                                                                               |                                                                                   |                                                                                    | 2272                                                                                |                                                                                     |                                                                                     | 2515                                                                                |                                                                                     |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 502                                                                                 |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       | 0.26                                                                              | 0.27                                                                              |                                                                                   |                                                                                   | 0.27                                                                              |                                                                                   |                                                                                    | 0.70                                                                                |                                                                                     |                                                                                     | 0.35                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 57 (57%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.54

Intersection Signal Delay: 4.8

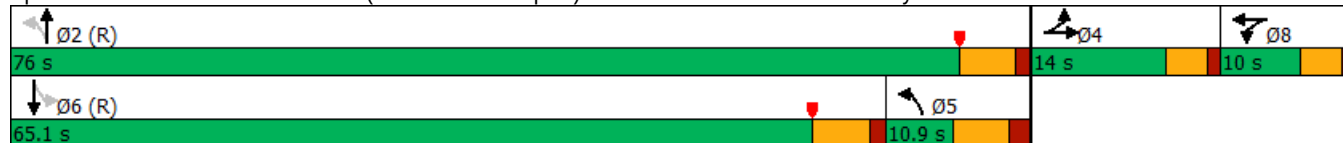
Intersection LOS: A

Intersection Capacity Utilization 73.9%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Driveway



# 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Road Concept B Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

| Lane Group              | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|------|
| Lane Configurations     |       |       |       |       |       |       |       |       |      |       |       |      |
| Traffic Volume (vph)    | 5     | 0     | 1     | 50    | 0     | 340   | 8     | 783   | 25   | 84    | 533   | 3    |
| Future Volume (vph)     | 5     | 0     | 1     | 50    | 0     | 340   | 8     | 783   | 25   | 84    | 533   | 3    |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12    | 12    | 12    | 12    | 12    | 11    | 12    | 11    | 12   | 12    | 11    | 12   |
| Storage Length (ft)     | 0     |       | 0     | 0     |       | 75    | 200   |       | 0    | 0     |       | 0    |
| Storage Lanes           | 0     |       | 1     | 0     |       | 1     | 1     |       | 0    | 1     |       | 0    |
| Taper Length (ft)       | 25    |       |       | 25    |       |       | 25    |       |      | 25    |       |      |
| Lane Util. Factor       | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 0.95  | 0.95 | 1.00  | 1.00  | 1.00 |
| Frt                     |       |       | 0.850 |       |       | 0.850 |       | 0.995 |      |       | 0.999 |      |
| Flt Protected           |       | 0.950 |       |       | 0.950 |       | 0.950 |       |      | 0.950 |       |      |
| Satd. Flow (prot)       | 0     | 1752  | 1568  | 0     | 1752  | 1516  | 1752  | 3371  | 0    | 1752  | 1781  | 0    |
| Flt Permitted           |       | 0.720 |       |       | 0.754 |       | 0.428 |       |      | 0.203 |       |      |
| Satd. Flow (perm)       | 0     | 1328  | 1568  | 0     | 1391  | 1516  | 790   | 3371  | 0    | 374   | 1781  | 0    |
| Right Turn on Red       |       |       | Yes   |       |       | No    |       |       | Yes  |       |       | Yes  |
| Satd. Flow (RTOR)       |       |       | 96    |       |       |       |       | 4     |      |       |       |      |
| Link Speed (mph)        |       | 30    |       |       | 25    |       |       | 30    |      |       | 30    |      |
| Link Distance (ft)      |       | 97    |       |       | 499   |       |       | 535   |      |       | 293   |      |
| Travel Time (s)         |       | 2.2   |       |       | 13.6  |       |       | 12.2  |      |       | 6.7   |      |
| Peak Hour Factor        | 0.80  | 0.80  | 0.80  | 0.90  | 0.90  | 0.90  | 0.88  | 0.88  | 0.88 | 0.92  | 0.92  | 0.92 |
| Heavy Vehicles (%)      | 3%    | 3%    | 3%    | 3%    | 3%    | 3%    | 3%    | 3%    | 3%   | 3%    | 3%    | 3%   |
| Adj. Flow (vph)         | 6     | 0     | 1     | 56    | 0     | 378   | 9     | 890   | 28   | 91    | 579   | 3    |
| Shared Lane Traffic (%) |       |       |       |       |       |       |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 0     | 6     | 1     | 0     | 56    | 378   | 9     | 918   | 0    | 91    | 582   | 0    |
| Turn Type               | Perm  | NA    | Perm  | Perm  | NA    | Perm  | Perm  | NA    |      | pm+pt | NA    |      |
| Protected Phases        |       | 4     |       |       | 8     |       |       | 2     |      | 1     | 6     |      |
| Permitted Phases        | 4     |       | 4     | 8     |       | 8     | 2     |       |      | 6     |       |      |
| Detector Phase          | 4     | 4     | 4     | 8     | 8     | 8     | 2     | 2     |      | 1     | 6     |      |
| Switch Phase            |       |       |       |       |       |       |       |       |      |       |       |      |
| Minimum Initial (s)     | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 15.0  | 15.0  |      | 3.0   | 15.0  |      |
| Minimum Split (s)       | 13.0  | 13.0  | 13.0  | 13.0  | 13.0  | 13.0  | 20.3  | 20.3  |      | 9.5   | 20.3  |      |
| Total Split (s)         | 42.0  | 42.0  | 42.0  | 42.0  | 42.0  | 42.0  | 44.5  | 44.5  |      | 13.5  | 58.0  |      |
| Total Split (%)         | 42.0% | 42.0% | 42.0% | 42.0% | 42.0% | 42.0% | 44.5% | 44.5% |      | 13.5% | 58.0% |      |
| Yellow Time (s)         | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 4.3   | 4.3   |      | 4.3   | 4.3   |      |
| All-Red Time (s)        | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |      | 2.2   | 1.0   |      |
| Lost Time Adjust (s)    |       | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   | 0.0   |      | 0.0   | 0.0   |      |
| Total Lost Time (s)     |       | 4.0   | 4.0   |       | 4.0   | 4.0   | 5.3   | 5.3   |      | 6.5   | 5.3   |      |
| Lead/Lag                |       |       |       |       |       |       | Lag   | Lag   |      | Lead  |       |      |
| Lead-Lag Optimize?      |       |       |       |       |       |       | Yes   | Yes   |      | Yes   |       |      |
| Recall Mode             | None  | None  | None  | None  | None  | None  | C-Max | C-Max |      | None  | C-Max |      |
| Act Effect Green (s)    |       | 29.5  | 29.5  |       | 29.5  | 29.5  | 51.2  | 51.2  |      | 60.0  | 61.2  |      |
| Actuated g/C Ratio      |       | 0.30  | 0.30  |       | 0.30  | 0.30  | 0.51  | 0.51  |      | 0.60  | 0.61  |      |
| v/c Ratio               |       | 0.02  | 0.00  |       | 0.14  | 0.85  | 0.02  | 0.53  |      | 0.30  | 0.53  |      |
| Control Delay           |       | 21.2  | 0.0   |       | 24.0  | 50.1  | 17.5  | 20.1  |      | 5.4   | 5.3   |      |
| Queue Delay             |       | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   | 0.0   |      | 0.0   | 0.2   |      |
| Total Delay             |       | 21.2  | 0.0   |       | 24.0  | 50.1  | 17.5  | 20.1  |      | 5.4   | 5.6   |      |
| LOS                     |       | C     | A     |       | C     | D     | B     | C     |      | A     | A     |      |
| Approach Delay          |       | 18.2  |       |       | 46.7  |       |       | 20.0  |      |       | 5.5   |      |
| Approach LOS            |       | B     |       |       | D     |       |       | C     |      |       | A     |      |

# 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road Concept B Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  |                                                                                   | 3                                                                                 | 0                                                                                 |                                                                                   | 26                                                                                | 224                                                                               | 3                                                                                  | 208                                                                                 |                                                                                     | 7                                                                                   | 44                                                                                  |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 10                                                                                | 0                                                                                 |                                                                                   | 50                                                                                | 302                                                                               | 14                                                                                 | 313                                                                                 |                                                                                     | 16                                                                                  | 110                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 17                                                                                |                                                                                   |                                                                                   | 419                                                                               |                                                                                   |                                                                                    | 455                                                                                 |                                                                                     |                                                                                     | 213                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 75                                                                                | 200                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 504                                                                               | 655                                                                               |                                                                                   | 528                                                                               | 576                                                                               | 404                                                                                | 1727                                                                                |                                                                                     | 321                                                                                 | 1090                                                                                |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 108                                                                                 |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.01                                                                              | 0.00                                                                              |                                                                                   | 0.11                                                                              | 0.66                                                                              | 0.02                                                                               | 0.53                                                                                |                                                                                     | 0.28                                                                                | 0.59                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 37 (37%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 20.9

Intersection LOS: C

Intersection Capacity Utilization 62.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road

|                                                                                            |                                                                                            |                                                                                        |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø4 |
| 13.5 s                                                                                     | 44.5 s                                                                                     | 42 s                                                                                   |
|  Ø6 (R) |  Ø8     |                                                                                        |
| 58 s                                                                                       | 42 s                                                                                       |                                                                                        |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Improved Concept B Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (vph)    | 48                                                                                | 379                                                                               | 133                                                                               | 178                                                                               | 685                                                                               | 71                                                                                | 150                                                                                | 165                                                                                 | 62                                                                                  | 105                                                                                 | 351                                                                                 | 46                                                                                  |
| Future Volume (vph)     | 48                                                                                | 379                                                                               | 133                                                                               | 178                                                                               | 685                                                                               | 71                                                                                | 150                                                                                | 165                                                                                 | 62                                                                                  | 105                                                                                 | 351                                                                                 | 46                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 11                                                                                | 11                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                 | 11                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 200                                                                               |                                                                                   | 325                                                                               | 200                                                                               |                                                                                   | 0                                                                                 | 400                                                                                |                                                                                     | 75                                                                                  | 170                                                                                 |                                                                                     | 75                                                                                  |
| Storage Lanes           | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                  |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)       | 85                                                                                |                                                                                   |                                                                                   | 50                                                                                |                                                                                   |                                                                                   | 100                                                                                |                                                                                     |                                                                                     | 100                                                                                 |                                                                                     |                                                                                     |
| Lane Util. Factor       | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.961                                                                             |                                                                                   |                                                                                   | 0.986                                                                             |                                                                                   |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                              |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1678                                                                              | 3225                                                                              | 0                                                                                 | 1678                                                                              | 3423                                                                              | 0                                                                                 | 1678                                                                               | 1766                                                                                | 1553                                                                                | 1736                                                                                | 1827                                                                                | 1553                                                                                |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.233                                                                              |                                                                                     |                                                                                     | 0.579                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 1678                                                                              | 3225                                                                              | 0                                                                                 | 1678                                                                              | 3423                                                                              | 0                                                                                 | 411                                                                                | 1766                                                                                | 1553                                                                                | 1058                                                                                | 1827                                                                                | 1553                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | No                                                                                  |
| Satd. Flow (RTOR)       |                                                                                   | 34                                                                                |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                    |                                                                                     | 186                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 628                                                                               |                                                                                   |                                                                                   | 408                                                                               |                                                                                   |                                                                                    | 637                                                                                 |                                                                                     |                                                                                     | 355                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 14.3                                                                              |                                                                                   |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                    | 14.5                                                                                |                                                                                     |                                                                                     | 9.7                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.80                                                                               | 0.80                                                                                | 0.80                                                                                | 0.81                                                                                | 0.81                                                                                | 0.81                                                                                |
| Heavy Vehicles (%)      | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                 | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  |
| Adj. Flow (vph)         | 55                                                                                | 431                                                                               | 151                                                                               | 207                                                                               | 797                                                                               | 83                                                                                | 188                                                                                | 206                                                                                 | 78                                                                                  | 130                                                                                 | 433                                                                                 | 57                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 55                                                                                | 582                                                                               | 0                                                                                 | 207                                                                               | 880                                                                               | 0                                                                                 | 188                                                                                | 206                                                                                 | 78                                                                                  | 130                                                                                 | 433                                                                                 | 57                                                                                  |
| Turn Type               | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | NA                                                                                |                                                                                   | pm+pt                                                                              | NA                                                                                  | Perm                                                                                | pm+pt                                                                               | NA                                                                                  | Perm                                                                                |
| Protected Phases        | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 7                                                                                  | 4                                                                                   |                                                                                     | 3                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 4                                                                                  |                                                                                     | 4                                                                                   | 8                                                                                   |                                                                                     | 8                                                                                   |
| Detector Phase          | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 7                                                                                  | 4                                                                                   | 4                                                                                   | 3                                                                                   | 8                                                                                   | 8                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 15.0                                                                              |                                                                                   | 5.0                                                                               | 15.0                                                                              |                                                                                   | 5.0                                                                                | 10.0                                                                                | 10.0                                                                                | 5.0                                                                                 | 10.0                                                                                | 10.0                                                                                |
| Minimum Split (s)       | 9.7                                                                               | 21.6                                                                              |                                                                                   | 9.7                                                                               | 21.6                                                                              |                                                                                   | 9.3                                                                                | 16.8                                                                                | 16.8                                                                                | 9.3                                                                                 | 16.8                                                                                | 16.8                                                                                |
| Total Split (s)         | 12.0                                                                              | 27.0                                                                              |                                                                                   | 20.0                                                                              | 35.0                                                                              |                                                                                   | 12.0                                                                               | 32.1                                                                                | 32.1                                                                                | 12.9                                                                                | 33.0                                                                                | 33.0                                                                                |
| Total Split (%)         | 9.6%                                                                              | 21.6%                                                                             |                                                                                   | 16.0%                                                                             | 28.0%                                                                             |                                                                                   | 9.6%                                                                               | 25.7%                                                                               | 25.7%                                                                               | 10.3%                                                                               | 26.4%                                                                               | 26.4%                                                                               |
| Yellow Time (s)         | 3.0                                                                               | 4.1                                                                               |                                                                                   | 3.0                                                                               | 4.1                                                                               |                                                                                   | 3.3                                                                                | 4.4                                                                                 | 4.4                                                                                 | 3.3                                                                                 | 4.4                                                                                 | 4.4                                                                                 |
| All-Red Time (s)        | 1.7                                                                               | 2.5                                                                               |                                                                                   | 1.7                                                                               | 2.5                                                                               |                                                                                   | 1.0                                                                                | 2.4                                                                                 | 2.4                                                                                 | 1.0                                                                                 | 2.4                                                                                 | 2.4                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 4.7                                                                               | 6.6                                                                               |                                                                                   | 4.7                                                                               | 6.6                                                                               |                                                                                   | 4.3                                                                                | 6.8                                                                                 | 6.8                                                                                 | 4.3                                                                                 | 6.8                                                                                 | 6.8                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                               | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode             | None                                                                              | Min                                                                               |                                                                                   | None                                                                              | Min                                                                               |                                                                                   | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Act Effect Green (s)    | 6.8                                                                               | 20.4                                                                              |                                                                                   | 15.3                                                                              | 30.9                                                                              |                                                                                   | 36.2                                                                               | 26.0                                                                                | 26.0                                                                                | 36.6                                                                                | 26.2                                                                                | 26.2                                                                                |
| Actuated g/C Ratio      | 0.07                                                                              | 0.22                                                                              |                                                                                   | 0.17                                                                              | 0.34                                                                              |                                                                                   | 0.39                                                                               | 0.28                                                                                | 0.28                                                                                | 0.40                                                                                | 0.28                                                                                | 0.28                                                                                |
| v/c Ratio               | 0.44                                                                              | 0.79                                                                              |                                                                                   | 0.74                                                                              | 0.76                                                                              |                                                                                   | 0.70                                                                               | 0.41                                                                                | 0.14                                                                                | 0.27                                                                                | 0.83                                                                                | 0.13                                                                                |
| Control Delay           | 52.1                                                                              | 40.5                                                                              |                                                                                   | 54.1                                                                              | 33.3                                                                              |                                                                                   | 33.4                                                                               | 30.2                                                                                | 0.5                                                                                 | 17.2                                                                                | 46.6                                                                                | 25.5                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 52.1                                                                              | 40.5                                                                              |                                                                                   | 54.1                                                                              | 33.3                                                                              |                                                                                   | 33.4                                                                               | 30.2                                                                                | 0.5                                                                                 | 17.2                                                                                | 46.6                                                                                | 25.5                                                                                |
| LOS                     | D                                                                                 | D                                                                                 |                                                                                   | D                                                                                 | C                                                                                 |                                                                                   | C                                                                                  | C                                                                                   | A                                                                                   | B                                                                                   | D                                                                                   | C                                                                                   |
| Approach Delay          |                                                                                   | 41.5                                                                              |                                                                                   |                                                                                   | 37.2                                                                              |                                                                                   |                                                                                    | 26.6                                                                                |                                                                                     |                                                                                     | 38.5                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Improved Concept B Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

| Lane Group              | Ø9   |
|-------------------------|------|
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Heavy Vehicles (%)      |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 33.0 |
| Total Split (s)         | 33.0 |
| Total Split (%)         | 26%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Improved Concept B Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  | 31                                                                                | 159                                                                               |                                                                                   | 116                                                                               | 247                                                                               |                                                                                   | 67                                                                                 | 98                                                                                  | 0                                                                                   | 44                                                                                  | 236                                                                                 | 25                                                                                  |
| Queue Length 95th (ft)  | 68                                                                                | 214                                                                               |                                                                                   | #202                                                                              | 303                                                                               |                                                                                   | 98                                                                                 | 142                                                                                 | 0                                                                                   | 71                                                                                  | #308                                                                                | 49                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 548                                                                               |                                                                                   |                                                                                   | 328                                                                               |                                                                                   |                                                                                    | 557                                                                                 |                                                                                     |                                                                                     | 275                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 200                                                                               |                                                                                   |                                                                                   | 200                                                                               |                                                                                   |                                                                                   | 400                                                                                |                                                                                     | 75                                                                                  | 170                                                                                 |                                                                                     | 75                                                                                  |
| Base Capacity (vph)     | 133                                                                               | 741                                                                               |                                                                                   | 279                                                                               | 1154                                                                              |                                                                                   | 267                                                                                | 498                                                                                 | 572                                                                                 | 492                                                                                 | 520                                                                                 | 442                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.41                                                                              | 0.79                                                                              |                                                                                   | 0.74                                                                              | 0.76                                                                              |                                                                                   | 0.70                                                                               | 0.41                                                                                | 0.14                                                                                | 0.26                                                                                | 0.83                                                                                | 0.13                                                                                |

## Intersection Summary

Area Type: Other

Cycle Length: 125

Actuated Cycle Length: 92

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 36.7

Intersection LOS: D

Intersection Capacity Utilization 70.8%

ICU Level of Service C

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)

|                                                                                        |                                                                                        |                                                                                        |                                                                                          |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø9 |  Ø3 |  Ø4 |
| 20 s                                                                                   | 27 s                                                                                   | 33 s                                                                                   | 12.9 s                                                                                   | 32.1 s                                                                                   |
|  Ø5 |  Ø6 |                                                                                        |  Ø7 |  Ø8 |
| 12 s                                                                                   | 35 s                                                                                   |                                                                                        | 12 s                                                                                     | 33 s                                                                                     |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø9 |
| Queue Length 50th (ft)  |    |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |



# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & 2040-50 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |  |
| Traffic Volume (vph)    | 24                                                                                | 471                                                                               | 8                                                                                 | 25                                                                                | 892                                                                               | 42                                                                                | 51                                                                                 | 5                                                                                   | 20                                                                                  | 29                                                                                  | 1                                                                                   | 11                                                                                  |
| Future Volume (vph)     | 24                                                                                | 471                                                                               | 8                                                                                 | 25                                                                                | 892                                                                               | 42                                                                                | 51                                                                                 | 5                                                                                   | 20                                                                                  | 29                                                                                  | 1                                                                                   | 11                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                 | 13                                                                                  | 13                                                                                  | 12                                                                                  | 13                                                                                  | 13                                                                                  |
| Storage Length (ft)     | 0                                                                                 |                                                                                   | 0                                                                                 | 325                                                                               |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 25                                                                                  | 0                                                                                   |                                                                                     | 25                                                                                  |
| Storage Lanes           | 0                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 1                                                                                   | 0                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)       | 50                                                                                |                                                                                   |                                                                                   | 50                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   | 0.993                                                                             |                                                                                   |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected           |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   | 0.999                                                                             |                                                                                   |                                                                                    | 0.956                                                                               |                                                                                     |                                                                                     | 0.954                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3342                                                                              | 0                                                                                 | 0                                                                                 | 3329                                                                              | 0                                                                                 | 0                                                                                  | 1805                                                                                | 1605                                                                                | 0                                                                                   | 1801                                                                                | 1605                                                                                |
| Flt Permitted           |                                                                                   | 0.876                                                                             |                                                                                   |                                                                                   | 0.927                                                                             |                                                                                   |                                                                                    | 0.720                                                                               |                                                                                     |                                                                                     | 0.681                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 2933                                                                              | 0                                                                                 | 0                                                                                 | 3089                                                                              | 0                                                                                 | 0                                                                                  | 1359                                                                                | 1605                                                                                | 0                                                                                   | 1286                                                                                | 1605                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 3                                                                                 |                                                                                   |                                                                                   | 7                                                                                 |                                                                                   |                                                                                    |                                                                                     | 131                                                                                 |                                                                                     |                                                                                     | 131                                                                                 |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 401                                                                               |                                                                                   |                                                                                   | 502                                                                               |                                                                                   |                                                                                    | 123                                                                                 |                                                                                     |                                                                                     | 137                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.1                                                                               |                                                                                   |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                    | 3.4                                                                                 |                                                                                     |                                                                                     | 3.7                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.80                                                                               | 0.80                                                                                | 0.80                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Heavy Vehicles (%)      | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                 | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  |
| Adj. Flow (vph)         | 30                                                                                | 589                                                                               | 10                                                                                | 28                                                                                | 1002                                                                              | 47                                                                                | 64                                                                                 | 6                                                                                   | 25                                                                                  | 32                                                                                  | 1                                                                                   | 12                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 629                                                                               | 0                                                                                 | 0                                                                                 | 1077                                                                              | 0                                                                                 | 0                                                                                  | 70                                                                                  | 25                                                                                  | 0                                                                                   | 33                                                                                  | 12                                                                                  |
| Turn Type               | pm+pt                                                                             | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  | Perm                                                                                | Perm                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases        | 1                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                  |                                                                                     | 4                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   |
| Detector Phase          | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                  | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0                                                                                | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |
| Minimum Split (s)       | 9.0                                                                               | 20.8                                                                              |                                                                                   | 20.8                                                                              | 20.8                                                                              |                                                                                   | 11.0                                                                               | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                |
| Total Split (s)         | 9.0                                                                               | 56.0                                                                              |                                                                                   | 47.0                                                                              | 47.0                                                                              |                                                                                   | 12.0                                                                               | 12.0                                                                                | 12.0                                                                                | 12.0                                                                                | 12.0                                                                                | 12.0                                                                                |
| Total Split (%)         | 10.0%                                                                             | 62.2%                                                                             |                                                                                   | 52.2%                                                                             | 52.2%                                                                             |                                                                                   | 13.3%                                                                              | 13.3%                                                                               | 13.3%                                                                               | 13.3%                                                                               | 13.3%                                                                               | 13.3%                                                                               |
| Yellow Time (s)         | 3.0                                                                               | 4.3                                                                               |                                                                                   | 4.3                                                                               | 4.3                                                                               |                                                                                   | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| All-Red Time (s)        | 1.0                                                                               | 1.5                                                                               |                                                                                   | 1.5                                                                               | 1.5                                                                               |                                                                                   | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     |                                                                                   | 5.8                                                                               |                                                                                   |                                                                                   | 5.8                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 | 4.0                                                                                 |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |
| Lead/Lag                | Lead                                                                              |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               |                                                                                   | Lag                                                                                | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode             | Min                                                                               | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Act Effect Green (s)    |                                                                                   | 72.8                                                                              |                                                                                   |                                                                                   | 63.3                                                                              |                                                                                   |                                                                                    | 9.6                                                                                 | 9.6                                                                                 |                                                                                     | 9.6                                                                                 | 9.6                                                                                 |
| Actuated g/C Ratio      |                                                                                   | 0.81                                                                              |                                                                                   |                                                                                   | 0.70                                                                              |                                                                                   |                                                                                    | 0.11                                                                                | 0.11                                                                                |                                                                                     | 0.11                                                                                | 0.11                                                                                |
| v/c Ratio               |                                                                                   | 0.26                                                                              |                                                                                   |                                                                                   | 0.50                                                                              |                                                                                   |                                                                                    | 0.48                                                                                | 0.09                                                                                |                                                                                     | 0.24                                                                                | 0.04                                                                                |
| Control Delay           |                                                                                   | 2.9                                                                               |                                                                                   |                                                                                   | 2.3                                                                               |                                                                                   |                                                                                    | 48.3                                                                                | 0.6                                                                                 |                                                                                     | 40.0                                                                                | 0.3                                                                                 |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.2                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             |                                                                                   | 2.9                                                                               |                                                                                   |                                                                                   | 2.5                                                                               |                                                                                   |                                                                                    | 48.3                                                                                | 0.6                                                                                 |                                                                                     | 40.0                                                                                | 0.3                                                                                 |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | D                                                                                   | A                                                                                   |                                                                                     | D                                                                                   | A                                                                                   |
| Approach Delay          |                                                                                   | 2.9                                                                               |                                                                                   |                                                                                   | 2.5                                                                               |                                                                                   |                                                                                    | 35.8                                                                                |                                                                                     |                                                                                     | 29.4                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & 2040-50 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

| Lane Group              | Ø3   |
|-------------------------|------|
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Heavy Vehicles (%)      |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 3    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 22.0 |
| Total Split (s)         | 22.0 |
| Total Split (%)         | 24%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                | Lead |
| Lead-Lag Optimize?      | Yes  |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  |                                                                                   | 36                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 38                                                                                  | 0                                                                                   |                                                                                     | 18                                                                                  | 0                                                                                   |
| Queue Length 95th (ft)  |                                                                                   | 56                                                                                |                                                                                   |                                                                                   | m36                                                                               |                                                                                   |                                                                                    | 68                                                                                  | 0                                                                                   |                                                                                     | 44                                                                                  | 0                                                                                   |
| Internal Link Dist (ft) |                                                                                   | 321                                                                               |                                                                                   |                                                                                   | 422                                                                               |                                                                                   |                                                                                    | 43                                                                                  |                                                                                     |                                                                                     | 57                                                                                  |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |
| Base Capacity (vph)     |                                                                                   | 2388                                                                              |                                                                                   |                                                                                   | 2173                                                                              |                                                                                   |                                                                                    | 149                                                                                 | 293                                                                                 |                                                                                     | 142                                                                                 | 293                                                                                 |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 355                                                                               |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       |                                                                                   | 0.26                                                                              |                                                                                   |                                                                                   | 0.59                                                                              |                                                                                   |                                                                                    | 0.47                                                                                | 0.09                                                                                |                                                                                     | 0.23                                                                                | 0.04                                                                                |

## Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 19 (21%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.50

Intersection Signal Delay: 5.0

Intersection LOS: A

Intersection Capacity Utilization 62.0%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                            |                                                                                         |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø3 |  Ø4 |
| 9 s                                                                                        | 47 s                                                                                       | 22 s                                                                                    | 12 s                                                                                     |
|  Ø6 (R) |                                                                                            |                                                                                         |                                                                                          |
| 56 s                                                                                       |                                                                                            |                                                                                         |                                                                                          |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø3 |
| Queue Length 50th (ft)  |    |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |

# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) 2040 Improved Concept B Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

| Lane Group              | EBL   | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
|-------------------------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|
| Lane Configurations     |       | ↔↔    |      | ↔     | ↔     |      | ↔     | ↔     |      | ↔     | ↔     |      |
| Traffic Volume (vph)    | 5     | 456   | 58   | 54    | 958   | 3    | 76    | 5     | 31   | 3     | 2     | 2    |
| Future Volume (vph)     | 5     | 456   | 58   | 54    | 958   | 3    | 76    | 5     | 31   | 3     | 2     | 2    |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12    | 11    | 12   | 12    | 11    | 12   | 12    | 10    | 10   | 12    | 12    | 12   |
| Storage Length (ft)     | 0     |       | 0    | 175   |       | 0    | 75    |       | 250  | 0     |       | 0    |
| Storage Lanes           | 0     |       | 0    | 1     |       | 0    | 1     |       | 0    | 1     |       | 0    |
| Taper Length (ft)       | 25    |       |      | 25    |       |      | 50    |       |      | 25    |       |      |
| Lane Util. Factor       | 0.95  | 0.95  | 0.95 | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 |
| Frt                     |       | 0.983 |      |       |       |      |       | 0.869 |      |       | 0.925 |      |
| Flt Protected           |       |       |      | 0.950 |       |      | 0.950 |       |      | 0.950 |       |      |
| Satd. Flow (prot)       | 0     | 3298  | 0    | 1736  | 1766  | 0    | 1736  | 1482  | 0    | 1736  | 1690  | 0    |
| Flt Permitted           |       | 0.950 |      | 0.405 |       |      | 0.754 |       |      | 0.732 |       |      |
| Satd. Flow (perm)       | 0     | 3133  | 0    | 740   | 1766  | 0    | 1377  | 1482  | 0    | 1337  | 1690  | 0    |
| Right Turn on Red       |       |       | Yes  |       |       | Yes  |       |       | Yes  |       |       | Yes  |
| Satd. Flow (RTOR)       |       | 40    |      |       |       |      |       | 34    |      |       | 3     |      |
| Link Speed (mph)        |       | 30    |      |       | 30    |      |       | 25    |      |       | 25    |      |
| Link Distance (ft)      |       | 502   |      |       | 407   |      |       | 405   |      |       | 198   |      |
| Travel Time (s)         |       | 11.4  |      |       | 9.3   |      |       | 11.0  |      |       | 5.4   |      |
| Peak Hour Factor        | 0.80  | 0.80  | 0.80 | 0.92  | 0.92  | 0.92 | 0.92  | 0.92  | 0.92 | 0.80  | 0.80  | 0.80 |
| Heavy Vehicles (%)      | 4%    | 4%    | 4%   | 4%    | 4%    | 4%   | 4%    | 4%    | 4%   | 4%    | 4%    | 4%   |
| Adj. Flow (vph)         | 6     | 570   | 73   | 59    | 1041  | 3    | 83    | 5     | 34   | 4     | 3     | 3    |
| Shared Lane Traffic (%) |       |       |      |       |       |      |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 0     | 649   | 0    | 59    | 1044  | 0    | 83    | 39    | 0    | 4     | 6     | 0    |
| Turn Type               | pm+pt | NA    |      | Perm  | NA    |      | Perm  | NA    |      | Perm  | NA    |      |
| Protected Phases        | 1     | 6     |      |       | 2     |      |       | 4     |      |       | 4     |      |
| Permitted Phases        | 6     |       |      | 2     |       |      | 4     |       |      | 4     |       |      |
| Detector Phase          | 1     | 6     |      | 2     | 2     |      | 4     | 4     |      | 4     | 4     |      |
| Switch Phase            |       |       |      |       |       |      |       |       |      |       |       |      |
| Minimum Initial (s)     | 3.0   | 15.0  |      | 15.0  | 15.0  |      | 7.0   | 7.0   |      | 7.0   | 7.0   |      |
| Minimum Split (s)       | 7.3   | 21.3  |      | 21.3  | 21.3  |      | 11.9  | 11.9  |      | 11.9  | 11.9  |      |
| Total Split (s)         | 7.3   | 72.0  |      | 64.7  | 64.7  |      | 18.0  | 18.0  |      | 18.0  | 18.0  |      |
| Total Split (%)         | 8.1%  | 80.0% |      | 71.9% | 71.9% |      | 20.0% | 20.0% |      | 20.0% | 20.0% |      |
| Yellow Time (s)         | 3.3   | 5.0   |      | 5.0   | 5.0   |      | 3.0   | 3.0   |      | 3.0   | 3.0   |      |
| All-Red Time (s)        | 1.0   | 1.3   |      | 1.3   | 1.3   |      | 1.9   | 1.9   |      | 1.9   | 1.9   |      |
| Lost Time Adjust (s)    |       | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      |
| Total Lost Time (s)     |       | 6.3   |      | 6.3   | 6.3   |      | 4.9   | 4.9   |      | 4.9   | 4.9   |      |
| Lead/Lag                | Lead  |       |      | Lag   | Lag   |      |       |       |      |       |       |      |
| Lead-Lag Optimize?      | Yes   |       |      | Yes   | Yes   |      |       |       |      |       |       |      |
| Recall Mode             | Max   | C-Max |      | C-Max | C-Max |      | None  | None  |      | None  | None  |      |
| Act Effect Green (s)    |       | 71.7  |      | 58.4  | 58.4  |      | 9.4   | 9.4   |      | 9.4   | 9.4   |      |
| Actuated g/C Ratio      |       | 0.80  |      | 0.65  | 0.65  |      | 0.10  | 0.10  |      | 0.10  | 0.10  |      |
| v/c Ratio               |       | 0.26  |      | 0.12  | 0.91  |      | 0.58  | 0.21  |      | 0.03  | 0.03  |      |
| Control Delay           |       | 2.7   |      | 1.5   | 9.9   |      | 53.7  | 17.1  |      | 34.7  | 27.6  |      |
| Queue Delay             |       | 0.0   |      | 0.0   | 2.7   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |      |
| Total Delay             |       | 2.7   |      | 1.5   | 12.6  |      | 53.7  | 17.1  |      | 34.7  | 27.6  |      |
| LOS                     |       | A     |      | A     | B     |      | D     | B     |      | C     | C     |      |
| Approach Delay          |       | 2.7   |      |       | 12.0  |      |       | 42.0  |      |       | 30.4  |      |
| Approach LOS            |       | A     |      |       | B     |      |       | D     |      |       | C     |      |

# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) 2040 Improved Concept B Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  |                                                                                   | 36                                                                                |                                                                                   | 3                                                                                 | 56                                                                                |                                                                                   | 46                                                                                 | 3                                                                                   |                                                                                     | 2                                                                                   | 2                                                                                   |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 46                                                                                |                                                                                   | m3                                                                                | m58                                                                               |                                                                                   | 89                                                                                 | 31                                                                                  |                                                                                     | 10                                                                                  | 11                                                                                  |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 422                                                                               |                                                                                   |                                                                                   | 327                                                                               |                                                                                   |                                                                                    | 325                                                                                 |                                                                                     |                                                                                     | 118                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   | 175                                                                               |                                                                                   |                                                                                   | 75                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 2518                                                                              |                                                                                   | 480                                                                               | 1145                                                                              |                                                                                   | 200                                                                                | 244                                                                                 |                                                                                     | 194                                                                                 | 248                                                                                 |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 46                                                                                |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.26                                                                              |                                                                                   | 0.12                                                                              | 0.95                                                                              |                                                                                   | 0.41                                                                               | 0.16                                                                                |                                                                                     | 0.02                                                                                | 0.02                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 9 (10%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 10.9

Intersection LOS: B

Intersection Capacity Utilization 70.8%

ICU Level of Service C

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                            |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø4 |
| 7.3 s                                                                                      | 64.7 s                                                                                     | 18 s                                                                                     |
|  Ø6 (R) |                                                                                            |                                                                                          |
| 72 s                                                                                       |                                                                                            |                                                                                          |

## 108: Burroughs Road &amp; Route 58 (Black Rock Turnpike)

## 2040 Improved Concept B

## Lanes, Volumes, Timings

Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |  |                                                                                   |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 29                                                                                | 464                                                                               | 8                                                                                 | 5                                                                                 | 963                                                                               | 71                                                                                | 7                                                                                 | 88                                                                                  | 3                                                                                   | 146                                                                                 | 76                                                                                  | 75                                                                                  |
| Future Volume (vph)     | 29                                                                                | 464                                                                               | 8                                                                                 | 5                                                                                 | 963                                                                               | 71                                                                                | 7                                                                                 | 88                                                                                  | 3                                                                                   | 146                                                                                 | 76                                                                                  | 75                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 16                                                                                  | 12                                                                                  | 12                                                                                  | 16                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 150                                                                               | 0                                                                                 |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes           | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 1                                                                                 | 0                                                                                 |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 50                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                     |                                                                                     | 50                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   | 0.996                                                                               |                                                                                     |                                                                                     | 0.966                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.996                                                                               |                                                                                     |                                                                                     | 0.976                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3307                                                                              | 0                                                                                 | 0                                                                                 | 1749                                                                              | 1538                                                                              | 0                                                                                 | 2034                                                                                | 0                                                                                   | 0                                                                                   | 1934                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.724                                                                             |                                                                                   |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                   | 0.970                                                                               |                                                                                     |                                                                                     | 0.785                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 2401                                                                              | 0                                                                                 | 0                                                                                 | 1744                                                                              | 1538                                                                              | 0                                                                                 | 1981                                                                                | 0                                                                                   | 0                                                                                   | 1555                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 3                                                                                 |                                                                                   |                                                                                   |                                                                                   | 49                                                                                |                                                                                   | 2                                                                                   |                                                                                     |                                                                                     | 19                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 407                                                                               |                                                                                   |                                                                                   | 390                                                                               |                                                                                   |                                                                                   | 466                                                                                 |                                                                                     |                                                                                     | 265                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                   | 8.9                                                                               |                                                                                   |                                                                                   | 12.7                                                                                |                                                                                     |                                                                                     | 7.2                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.80                                                                              | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                |
| Heavy Vehicles (%)      | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                  | 5%                                                                                  | 5%                                                                                  | 5%                                                                                  | 5%                                                                                  |
| Adj. Flow (vph)         | 36                                                                                | 580                                                                               | 10                                                                                | 5                                                                                 | 1014                                                                              | 75                                                                                | 9                                                                                 | 110                                                                                 | 4                                                                                   | 183                                                                                 | 95                                                                                  | 94                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 626                                                                               | 0                                                                                 | 0                                                                                 | 1019                                                                              | 75                                                                                | 0                                                                                 | 123                                                                                 | 0                                                                                   | 0                                                                                   | 372                                                                                 | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                | Perm                                                                              | Perm                                                                              | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   | 2                                                                                 | 4                                                                                 |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 6                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 | 2                                                                                 | 4                                                                                 | 4                                                                                   |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 15.0                                                                              | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              | 15.0                                                                              | 9.0                                                                               | 9.0                                                                                 |                                                                                     | 9.0                                                                                 | 9.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 20.6                                                                              | 20.6                                                                              |                                                                                   | 20.6                                                                              | 20.6                                                                              | 20.6                                                                              | 23.4                                                                              | 23.4                                                                                |                                                                                     | 14.4                                                                                | 14.4                                                                                |                                                                                     |
| Total Split (s)         | 58.0                                                                              | 58.0                                                                              |                                                                                   | 58.0                                                                              | 58.0                                                                              | 58.0                                                                              | 32.0                                                                              | 32.0                                                                                |                                                                                     | 32.0                                                                                | 32.0                                                                                |                                                                                     |
| Total Split (%)         | 64.4%                                                                             | 64.4%                                                                             |                                                                                   | 64.4%                                                                             | 64.4%                                                                             | 64.4%                                                                             | 35.6%                                                                             | 35.6%                                                                               |                                                                                     | 35.6%                                                                               | 35.6%                                                                               |                                                                                     |
| Yellow Time (s)         | 4.1                                                                               | 4.1                                                                               |                                                                                   | 4.1                                                                               | 4.1                                                                               | 4.1                                                                               | 3.1                                                                               | 3.1                                                                                 |                                                                                     | 3.1                                                                                 | 3.1                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.5                                                                               | 1.5                                                                               |                                                                                   | 1.5                                                                               | 1.5                                                                               | 1.5                                                                               | 2.3                                                                               | 2.3                                                                                 |                                                                                     | 2.3                                                                                 | 2.3                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   | 5.6                                                                               | 5.6                                                                               |                                                                                   | 5.4                                                                                 |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | C-Max                                                                             | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             | C-Max                                                                             | None                                                                              | None                                                                                |                                                                                     | None                                                                                | None                                                                                |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 55.6                                                                              |                                                                                   |                                                                                   | 55.6                                                                              | 55.6                                                                              |                                                                                   | 23.4                                                                                |                                                                                     |                                                                                     | 23.4                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.62                                                                              |                                                                                   |                                                                                   | 0.62                                                                              | 0.62                                                                              |                                                                                   | 0.26                                                                                |                                                                                     |                                                                                     | 0.26                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.42                                                                              |                                                                                   |                                                                                   | 0.95                                                                              | 0.08                                                                              |                                                                                   | 0.24                                                                                |                                                                                     |                                                                                     | 0.89                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 7.7                                                                               |                                                                                   |                                                                                   | 36.0                                                                              | 4.0                                                                               |                                                                                   | 25.9                                                                                |                                                                                     |                                                                                     | 54.2                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 7.7                                                                               |                                                                                   |                                                                                   | 36.0                                                                              | 4.0                                                                               |                                                                                   | 25.9                                                                                |                                                                                     |                                                                                     | 54.2                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | D                                                                                 | A                                                                                 |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 7.7                                                                               |                                                                                   |                                                                                   | 33.8                                                                              |                                                                                   |                                                                                   | 25.9                                                                                |                                                                                     |                                                                                     | 54.2                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |



108: Burroughs Road & Route 58 (Black Rock Turnpike)  
Lanes, Volumes, Timings

2040 Improved Concept B  
Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  |                                                                                   | 46                                                                                |                                                                                   |                                                                                   | 518                                                                               | 6                                                                                 |                                                                                    | 53                                                                                  |                                                                                     |                                                                                     | 188                                                                                 |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 56                                                                                |                                                                                   |                                                                                   | #847                                                                              | 24                                                                                |                                                                                    | 83                                                                                  |                                                                                     |                                                                                     | 247                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 327                                                                               |                                                                                   |                                                                                   | 310                                                                               |                                                                                   |                                                                                    | 386                                                                                 |                                                                                     |                                                                                     | 185                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 150                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 1484                                                                              |                                                                                   |                                                                                   | 1077                                                                              | 968                                                                               |                                                                                    | 586                                                                                 |                                                                                     |                                                                                     | 472                                                                                 |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.42                                                                              |                                                                                   |                                                                                   | 0.95                                                                              | 0.08                                                                              |                                                                                    | 0.21                                                                                |                                                                                     |                                                                                     | 0.79                                                                                |                                                                                     |

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow, Master Intersection

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 29.4

Intersection LOS: C

Intersection Capacity Utilization 87.1%

ICU Level of Service E

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                          |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø2 (R) |  Ø4 |
| 58 s                                                                                       | 32 s                                                                                     |
|  Ø6 (R) |  Ø8 |
| 58 s                                                                                       | 32 s                                                                                     |

201: Tunxis Hill Road & Route 58 (Tunxis Hill Cutoff)  
Lanes, Volumes, Timings

2040 Improved Concept B  
Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |  |
| Traffic Volume (vph)    | 271                                                                               | 2                                                                                 | 64                                                                                | 633                                                                               | 0                                                                                 | 61                                                                                |
| Future Volume (vph)     | 271                                                                               | 2                                                                                 | 64                                                                                | 633                                                                               | 0                                                                                 | 61                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 10                                                                                | 10                                                                                |
| Storage Length (ft)     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 50                                                                                |
| Storage Lanes           |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |
| Taper Length (ft)       |                                                                                   |                                                                                   | 25                                                                                |                                                                                   | 25                                                                                |                                                                                   |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.999                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |
| Flt Protected           |                                                                                   |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 3352                                                                              | 0                                                                                 | 0                                                                                 | 1757                                                                              | 1705                                                                              | 1449                                                                              |
| Flt Permitted           |                                                                                   |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 3352                                                                              | 0                                                                                 | 0                                                                                 | 1757                                                                              | 1705                                                                              | 1449                                                                              |
| Link Speed (mph)        | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                | 25                                                                                |                                                                                   |
| Link Distance (ft)      | 1095                                                                              |                                                                                   |                                                                                   | 214                                                                               | 782                                                                               |                                                                                   |
| Travel Time (s)         | 24.9                                                                              |                                                                                   |                                                                                   | 4.9                                                                               | 21.3                                                                              |                                                                                   |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.91                                                                              | 0.91                                                                              | 0.80                                                                              | 0.80                                                                              |
| Heavy Vehicles (%)      | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                |
| Adj. Flow (vph)         | 339                                                                               | 3                                                                                 | 70                                                                                | 696                                                                               | 0                                                                                 | 76                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 342                                                                               | 0                                                                                 | 0                                                                                 | 766                                                                               | 0                                                                                 | 76                                                                                |
| Sign Control            | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 51.1% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1.1

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↑↑   |      |      | ↑    | ↑    | ↑    |
| Traffic Vol, veh/h       | 271  | 2    | 64   | 633  | 0    | 61   |
| Future Vol, veh/h        | 271  | 2    | 64   | 633  | 0    | 61   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | 0    | 50   |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 80   | 80   | 91   | 91   | 80   | 80   |
| Heavy Vehicles, %        | 4    | 4    | 4    | 4    | 4    | 4    |
| Mvmt Flow                | 339  | 3    | 70   | 696  | 0    | 76   |

| Major/Minor          | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0      | 0      | 342    |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Critical Hdwy        | -      | -      | 4.16   |
| Critical Hdwy Stg 1  | -      | -      | -      |
| Critical Hdwy Stg 2  | -      | -      | -      |
| Follow-up Hdwy       | -      | -      | 2.238  |
| Pot Cap-1 Maneuver   | -      | -      | 1203   |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | -      | -      | 1203   |
| Mov Cap-2 Maneuver   | -      | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |

| Approach             | EB | WB  | NB  |
|----------------------|----|-----|-----|
| HCM Control Delay, s | 0  | 0.8 | 9.7 |
| HCM LOS              |    |     | A   |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | -     | 838   | -   | -   | 1203  | -   |
| HCM Lane V/C Ratio    | -     | 0.091 | -   | -   | 0.058 | -   |
| HCM Control Delay (s) | 0     | 9.7   | -   | -   | 8.2   | 0   |
| HCM Lane LOS          | A     | A     | -   | -   | A     | A   |
| HCM 95th %tile Q(veh) | -     | 0.3   | -   | -   | 0.2   | -   |

202: Route 732 (Black Rock Turnpike) & Judd Street  
Lanes, Volumes, Timings

2040 Improved Concept B  
Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations     |  |                                                                                   |  |  |  |                                                                                   |
| Traffic Volume (vph)    | 20                                                                                | 68                                                                                | 76                                                                                | 357                                                                               | 394                                                                               | 32                                                                                |
| Future Volume (vph)     | 20                                                                                | 68                                                                                | 76                                                                                | 357                                                                               | 394                                                                               | 32                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Storage Length (ft)     | 0                                                                                 | 0                                                                                 | 25                                                                                |                                                                                   |                                                                                   | 0                                                                                 |
| Storage Lanes           | 1                                                                                 | 0                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.896                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.990                                                                             |                                                                                   |
| Flt Protected           | 0.989                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1817                                                                              | 0                                                                                 | 1719                                                                              | 1810                                                                              | 1791                                                                              | 0                                                                                 |
| Flt Permitted           | 0.989                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1817                                                                              | 0                                                                                 | 1719                                                                              | 1810                                                                              | 1791                                                                              | 0                                                                                 |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 586                                                                               |                                                                                   |                                                                                   | 395                                                                               | 218                                                                               |                                                                                   |
| Travel Time (s)         | 16.0                                                                              |                                                                                   |                                                                                   | 9.0                                                                               | 5.0                                                                               |                                                                                   |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |
| Heavy Vehicles (%)      | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                |
| Adj. Flow (vph)         | 25                                                                                | 85                                                                                | 83                                                                                | 388                                                                               | 428                                                                               | 35                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 110                                                                               | 0                                                                                 | 83                                                                                | 388                                                                               | 463                                                                               | 0                                                                                 |
| Sign Control            | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 42.2% ICU Level of Service A

Analysis Period (min) 15

| Intersection             |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |      |
|--------------------------|-----------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 2.3                                                                               |        |                                                                                   |                                                                                   |                                                                                   |      |
| Movement                 | EBL                                                                               | EBR    | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |
| Lane Configurations      |  |        |  |  |  |      |
| Traffic Vol, veh/h       | 20                                                                                | 68     | 76                                                                                | 357                                                                               | 394                                                                               | 32   |
| Future Vol, veh/h        | 20                                                                                | 68     | 76                                                                                | 357                                                                               | 394                                                                               | 32   |
| Conflicting Peds, #/hr   | 0                                                                                 | 0      | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    |
| Sign Control             | Stop                                                                              | Stop   | Free                                                                              | Free                                                                              | Free                                                                              | Free |
| RT Channelized           | -                                                                                 | None   | -                                                                                 | None                                                                              | -                                                                                 | None |
| Storage Length           | 0                                                                                 | -      | 25                                                                                | -                                                                                 | -                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -      | -                                                                                 | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -      | -                                                                                 | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 80                                                                                | 80     | 92                                                                                | 92                                                                                | 92                                                                                | 92   |
| Heavy Vehicles, %        | 5                                                                                 | 5      | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5    |
| Mvmt Flow                | 25                                                                                | 85     | 83                                                                                | 388                                                                               | 428                                                                               | 35   |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |      |
| Major/Minor              | Minor2                                                                            | Major1 |                                                                                   | Major2                                                                            |                                                                                   |      |
| Conflicting Flow All     | 1000                                                                              | 446    | 463                                                                               | 0                                                                                 | -                                                                                 | 0    |
| Stage 1                  | 446                                                                               | -      | -                                                                                 | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 554                                                                               | -      | -                                                                                 | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy            | 6.45                                                                              | 6.25   | 4.15                                                                              | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy Stg 1      | 5.45                                                                              | -      | -                                                                                 | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy Stg 2      | 5.45                                                                              | -      | -                                                                                 | -                                                                                 | -                                                                                 | -    |
| Follow-up Hdwy           | 3.545                                                                             | 3.345  | 2.245                                                                             | -                                                                                 | -                                                                                 | -    |
| Pot Cap-1 Maneuver       | 266                                                                               | 606    | 1083                                                                              | -                                                                                 | -                                                                                 | -    |
| Stage 1                  | 639                                                                               | -      | -                                                                                 | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 570                                                                               | -      | -                                                                                 | -                                                                                 | -                                                                                 | -    |
| Platoon blocked, %       |                                                                                   |        |                                                                                   | -                                                                                 | -                                                                                 | -    |
| Mov Cap-1 Maneuver       | 246                                                                               | 606    | 1083                                                                              | -                                                                                 | -                                                                                 | -    |
| Mov Cap-2 Maneuver       | 246                                                                               | -      | -                                                                                 | -                                                                                 | -                                                                                 | -    |
| Stage 1                  | 590                                                                               | -      | -                                                                                 | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 570                                                                               | -      | -                                                                                 | -                                                                                 | -                                                                                 | -    |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |      |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |      |
| Approach                 | EB                                                                                | NB     |                                                                                   | SB                                                                                |                                                                                   |      |
| HCM Control Delay, s     | 15.4                                                                              | 1.5    |                                                                                   | 0                                                                                 |                                                                                   |      |
| HCM LOS                  | C                                                                                 |        |                                                                                   |                                                                                   |                                                                                   |      |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |      |
| Minor Lane/Major Mvmt    | NBL                                                                               | NBT    | EBLn1                                                                             | SBT                                                                               | SBR                                                                               |      |
| Capacity (veh/h)         | 1083                                                                              | -      | 455                                                                               | -                                                                                 | -                                                                                 |      |
| HCM Lane V/C Ratio       | 0.076                                                                             | -      | 0.242                                                                             | -                                                                                 | -                                                                                 |      |
| HCM Control Delay (s)    | 8.6                                                                               | -      | 15.4                                                                              | -                                                                                 | -                                                                                 |      |
| HCM Lane LOS             | A                                                                                 | -      | C                                                                                 | -                                                                                 | -                                                                                 |      |
| HCM 95th %tile Q(veh)    | 0.2                                                                               | -      | 0.9                                                                               | -                                                                                 | -                                                                                 |      |

203: Moritz Place & Route 58 (Black Rock Turnpike)  
Lanes, Volumes, Timings

2040 Improved Concept B  
Timing Plan: Weekday AM Peak

|                         | →    | ↘    | ↙    | ←    | ↖    | ↗     |
|-------------------------|------|------|------|------|------|-------|
| Lane Group              | EBT  | EBR  | WBL  | WBT  | NBL  | NBR   |
| Lane Configurations     | ↰    |      |      | ↱    |      | ↱     |
| Traffic Volume (vph)    | 615  | 1    | 0    | 956  | 0    | 3     |
| Future Volume (vph)     | 615  | 1    | 0    | 956  | 0    | 3     |
| Ideal Flow (vphpl)      | 1900 | 1900 | 1900 | 1900 | 1900 | 1900  |
| Lane Util. Factor       | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  |
| Frt                     |      |      |      |      |      | 0.865 |
| Flt Protected           |      |      |      |      |      |       |
| Satd. Flow (prot)       | 1827 | 0    | 0    | 1827 | 0    | 1580  |
| Flt Permitted           |      |      |      |      |      |       |
| Satd. Flow (perm)       | 1827 | 0    | 0    | 1827 | 0    | 1580  |
| Link Speed (mph)        | 30   |      |      | 30   | 30   |       |
| Link Distance (ft)      | 187  |      |      | 131  | 186  |       |
| Travel Time (s)         | 4.3  |      |      | 3.0  | 4.2  |       |
| Peak Hour Factor        | 0.80 | 0.80 | 0.95 | 0.95 | 0.80 | 0.80  |
| Heavy Vehicles (%)      | 4%   | 4%   | 4%   | 4%   | 4%   | 4%    |
| Adj. Flow (vph)         | 769  | 1    | 0    | 1006 | 0    | 4     |
| Shared Lane Traffic (%) |      |      |      |      |      |       |
| Lane Group Flow (vph)   | 770  | 0    | 0    | 1006 | 0    | 4     |
| Sign Control            | Free |      |      | Free | Stop |       |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 53.6% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 0

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↔    |      |      | ↑    |      | ↗    |
| Traffic Vol, veh/h       | 615  | 1    | 0    | 956  | 0    | 3    |
| Future Vol, veh/h        | 615  | 1    | 0    | 956  | 0    | 3    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | 0    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 80   | 80   | 95   | 95   | 80   | 80   |
| Heavy Vehicles, %        | 4    | 4    | 4    | 4    | 4    | 4    |
| Mvmt Flow                | 769  | 1    | 0    | 1006 | 0    | 4    |

| Major/Minor          | Major1 | Major2 | Minor1      |
|----------------------|--------|--------|-------------|
| Conflicting Flow All | 0      | 0      | - - - 770   |
| Stage 1              | -      | -      | - - -       |
| Stage 2              | -      | -      | - - -       |
| Critical Hdwy        | -      | -      | - - - 6.24  |
| Critical Hdwy Stg 1  | -      | -      | - - -       |
| Critical Hdwy Stg 2  | -      | -      | - - -       |
| Follow-up Hdwy       | -      | -      | - - - 3.336 |
| Pot Cap-1 Maneuver   | -      | -      | 0 - 0 397   |
| Stage 1              | -      | -      | 0 - 0 -     |
| Stage 2              | -      | -      | 0 - 0 -     |
| Platoon blocked, %   | -      | -      | -           |
| Mov Cap-1 Maneuver   | -      | -      | - - - 397   |
| Mov Cap-2 Maneuver   | -      | -      | - - -       |
| Stage 1              | -      | -      | - - -       |
| Stage 2              | -      | -      | - - -       |

| Approach             | EB | WB | NB   |
|----------------------|----|----|------|
| HCM Control Delay, s | 0  | 0  | 14.2 |
| HCM LOS              |    |    | B    |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h)      | 397   | -   | -   | -   |
| HCM Lane V/C Ratio    | 0.009 | -   | -   | -   |
| HCM Control Delay (s) | 14.2  | -   | -   | -   |
| HCM Lane LOS          | B     | -   | -   | -   |
| HCM 95th %tile Q(veh) | 0     | -   | -   | -   |



# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Talbot Drive Concept B Lanes, Volumes, Timings

Timing Plan: Weekday Midday

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 6                                                                                 | 0                                                                                 | 1                                                                                 | 46                                                                                | 0                                                                                 | 47                                                                                | 5                                                                                  | 662                                                                                 | 62                                                                                  | 58                                                                                  | 724                                                                                 | 5                                                                                   |
| Future Volume (vph)     | 6                                                                                 | 0                                                                                 | 1                                                                                 | 46                                                                                | 0                                                                                 | 47                                                                                | 5                                                                                  | 662                                                                                 | 62                                                                                  | 58                                                                                  | 724                                                                                 | 5                                                                                   |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                 | 13                                                                                  | 12                                                                                  | 12                                                                                  | 13                                                                                  | 12                                                                                  |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.985                                                                             |                                                                                   |                                                                                   | 0.932                                                                             |                                                                                   |                                                                                    | 0.989                                                                               |                                                                                     |                                                                                     | 0.999                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.957                                                                             |                                                                                   |                                                                                   | 0.976                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.996                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 1990                                                                              | 0                                                                                 | 0                                                                                 | 1920                                                                              | 0                                                                                 | 0                                                                                  | 1904                                                                                | 0                                                                                   | 0                                                                                   | 1915                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.752                                                                             |                                                                                   |                                                                                   | 0.839                                                                             |                                                                                   |                                                                                    | 0.996                                                                               |                                                                                     |                                                                                     | 0.900                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 1564                                                                              | 0                                                                                 | 0                                                                                 | 1651                                                                              | 0                                                                                 | 0                                                                                  | 1896                                                                                | 0                                                                                   | 0                                                                                   | 1731                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 27                                                                                |                                                                                   |                                                                                   | 40                                                                                |                                                                                   |                                                                                    | 14                                                                                  |                                                                                     |                                                                                     | 1                                                                                   |                                                                                     |
| Link Speed (mph)        |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 35                                                                                  |                                                                                     |                                                                                     | 35                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 378                                                                               |                                                                                   |                                                                                   | 442                                                                               |                                                                                   |                                                                                    | 1898                                                                                |                                                                                     |                                                                                     | 522                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 10.3                                                                              |                                                                                   |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                    | 37.0                                                                                |                                                                                     |                                                                                     | 10.2                                                                                |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.84                                                                              | 0.84                                                                              | 0.84                                                                              | 0.95                                                                               | 0.95                                                                                | 0.95                                                                                | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                |
| Adj. Flow (vph)         | 8                                                                                 | 0                                                                                 | 1                                                                                 | 55                                                                                | 0                                                                                 | 56                                                                                | 5                                                                                  | 697                                                                                 | 65                                                                                  | 62                                                                                  | 770                                                                                 | 5                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 9                                                                                 | 0                                                                                 | 0                                                                                 | 111                                                                               | 0                                                                                 | 0                                                                                  | 767                                                                                 | 0                                                                                   | 0                                                                                   | 837                                                                                 | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                    | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Permitted Phases        | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   | 2                                                                                  |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 4                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |                                                                                   | 2                                                                                  | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 15.0                                                                               | 15.0                                                                                |                                                                                     | 15.0                                                                                | 15.0                                                                                |                                                                                     |
| Minimum Split (s)       | 11.7                                                                              | 11.7                                                                              |                                                                                   | 11.7                                                                              | 11.7                                                                              |                                                                                   | 20.6                                                                               | 20.6                                                                                |                                                                                     | 20.6                                                                                | 20.6                                                                                |                                                                                     |
| Total Split (s)         | 19.0                                                                              | 19.0                                                                              |                                                                                   | 19.0                                                                              | 19.0                                                                              |                                                                                   | 86.0                                                                               | 86.0                                                                                |                                                                                     | 86.0                                                                                | 86.0                                                                                |                                                                                     |
| Total Split (%)         | 18.1%                                                                             | 18.1%                                                                             |                                                                                   | 18.1%                                                                             | 18.1%                                                                             |                                                                                   | 81.9%                                                                              | 81.9%                                                                               |                                                                                     | 81.9%                                                                               | 81.9%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.3                                                                               | 3.3                                                                               |                                                                                   | 3.3                                                                               | 3.3                                                                               |                                                                                   | 4.0                                                                                | 4.0                                                                                 |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.4                                                                               | 1.4                                                                               |                                                                                   | 1.4                                                                               | 1.4                                                                               |                                                                                   | 1.6                                                                                | 1.6                                                                                 |                                                                                     | 1.6                                                                                 | 1.6                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                    | 5.6                                                                                 |                                                                                     |                                                                                     | 5.6                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              |                                                                                   | C-Min                                                                              | C-Min                                                                               |                                                                                     | C-Min                                                                               | C-Min                                                                               |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 9.7                                                                               |                                                                                   |                                                                                   | 9.7                                                                               |                                                                                   |                                                                                    | 85.0                                                                                |                                                                                     |                                                                                     | 85.0                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.09                                                                              |                                                                                   |                                                                                   | 0.09                                                                              |                                                                                   |                                                                                    | 0.81                                                                                |                                                                                     |                                                                                     | 0.81                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.05                                                                              |                                                                                   |                                                                                   | 0.59                                                                              |                                                                                   |                                                                                    | 0.50                                                                                |                                                                                     |                                                                                     | 0.60                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                   | 41.9                                                                              |                                                                                   |                                                                                    | 2.7                                                                                 |                                                                                     |                                                                                     | 6.3                                                                                 |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                   | 41.9                                                                              |                                                                                   |                                                                                    | 2.7                                                                                 |                                                                                     |                                                                                     | 6.3                                                                                 |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                   | 41.9                                                                              |                                                                                   |                                                                                    | 2.7                                                                                 |                                                                                     |                                                                                     | 6.3                                                                                 |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 46                                                                                |                                                                                   |                                                                                    | 49                                                                                  |                                                                                     |                                                                                     | 152                                                                                 |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 89                                                                                |                                                                                   |                                                                                    | 17                                                                                  |                                                                                     |                                                                                     | 308                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 298                                                                               |                                                                                   |                                                                                   | 362                                                                               |                                                                                   |                                                                                    | 1818                                                                                |                                                                                     |                                                                                     | 442                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

2040 Diverged Concept B

Timing Plan: Weekday MIDDAY

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Base Capacity (vph)    |                                                                                   | 236                                                                               |                                                                                   |                                                                                   | 259                                                                               |                                                                                   |                                                                                    | 1536                                                                                |                                                                                     |                                                                                     | 1400                                                                                |                                                                                     |
| Starvation Cap Reductn |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   | 0.04                                                                              |                                                                                   |                                                                                   | 0.43                                                                              |                                                                                   |                                                                                    | 0.50                                                                                |                                                                                     |                                                                                     | 0.60                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 105

Actuated Cycle Length: 105

Offset: 16 (15%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 6.9

Intersection LOS: A

Intersection Capacity Utilization 93.0%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

|                                                                                          |                                                                                      |                                                                                     |      |
|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
|  Ø2 (R) |   |  | Ø4   |
| 86 s                                                                                     |                                                                                      |                                                                                     | 19 s |
|  Ø6 (R) |  |  | Ø8   |
| 86 s                                                                                     |                                                                                      |                                                                                     | 19 s |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

## Lanes, Volumes, Timings

2040 Improved Concept B

Timing Plan: Weekday MIDDAY

|                         |  |  |  |  |  |  |      |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3   |
| Lane Configurations     |  |  |  |  |  |  |      |
| Traffic Volume (vph)    | 80                                                                                | 177                                                                               | 173                                                                               | 661                                                                               | 702                                                                               | 72                                                                                |      |
| Future Volume (vph)     | 80                                                                                | 177                                                                               | 173                                                                               | 661                                                                               | 702                                                                               | 72                                                                                |      |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |      |
| Lane Width (ft)         | 10                                                                                | 10                                                                                | 11                                                                                | 11                                                                                | 12                                                                                | 12                                                                                |      |
| Storage Length (ft)     | 0                                                                                 | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   | 50                                                                                |      |
| Storage Lanes           | 1                                                                                 | 1                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 1                                                                                 |      |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |      |
| Frt                     |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |      |
| Flt Protected           | 0.950                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |      |
| Satd. Flow (prot)       | 1636                                                                              | 1463                                                                              | 1694                                                                              | 3388                                                                              | 1845                                                                              | 1568                                                                              |      |
| Flt Permitted           | 0.950                                                                             |                                                                                   | 0.272                                                                             |                                                                                   |                                                                                   |                                                                                   |      |
| Satd. Flow (perm)       | 1636                                                                              | 1463                                                                              | 485                                                                               | 3388                                                                              | 1845                                                                              | 1568                                                                              |      |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |      |
| Satd. Flow (RTOR)       |                                                                                   | 216                                                                               |                                                                                   |                                                                                   |                                                                                   | 20                                                                                |      |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 35                                                                                |                                                                                   |      |
| Link Distance (ft)      | 445                                                                               |                                                                                   |                                                                                   | 510                                                                               | 341                                                                               |                                                                                   |      |
| Travel Time (s)         | 12.1                                                                              |                                                                                   |                                                                                   | 11.6                                                                              | 6.6                                                                               |                                                                                   |      |
| Peak Hour Factor        | 0.82                                                                              | 0.82                                                                              | 0.86                                                                              | 0.86                                                                              | 0.97                                                                              | 0.97                                                                              |      |
| Heavy Vehicles (%)      | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                |      |
| Adj. Flow (vph)         | 98                                                                                | 216                                                                               | 201                                                                               | 769                                                                               | 724                                                                               | 74                                                                                |      |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Group Flow (vph)   | 98                                                                                | 216                                                                               | 201                                                                               | 769                                                                               | 724                                                                               | 74                                                                                |      |
| Turn Type               | Prot                                                                              | Perm                                                                              | pm+pt                                                                             | NA                                                                                | NA                                                                                | Perm                                                                              |      |
| Protected Phases        | 4                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 | 2                                                                                 |                                                                                   | 3    |
| Permitted Phases        |                                                                                   | 4                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |      |
| Detector Phase          | 4                                                                                 | 4                                                                                 | 1                                                                                 | 6                                                                                 | 2                                                                                 | 2                                                                                 |      |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               | 5.0                                                                               | 15.0                                                                              | 15.0                                                                              | 15.0                                                                              | 7.0  |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              | 9.2                                                                               | 21.9                                                                              | 21.9                                                                              | 21.9                                                                              | 22.0 |
| Total Split (s)         | 12.0                                                                              | 12.0                                                                              | 14.0                                                                              | 71.0                                                                              | 57.0                                                                              | 57.0                                                                              | 22.0 |
| Total Split (%)         | 11.4%                                                                             | 11.4%                                                                             | 13.3%                                                                             | 67.6%                                                                             | 54.3%                                                                             | 54.3%                                                                             | 21%  |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               | 3.2                                                                               | 4.9                                                                               | 4.9                                                                               | 4.9                                                                               | 4.0  |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 0.0  |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |      |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               | 4.2                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               |      |
| Lead/Lag                | Lag                                                                               | Lag                                                                               | Lead                                                                              |                                                                                   | Lag                                                                               | Lag                                                                               | Lead |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               | Yes  |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | C-Min                                                                             | C-Min                                                                             | C-Min                                                                             | None |
| Act Effect Green (s)    | 11.9                                                                              | 11.9                                                                              | 84.9                                                                              | 82.2                                                                              | 68.3                                                                              | 68.3                                                                              |      |
| Actuated g/C Ratio      | 0.11                                                                              | 0.11                                                                              | 0.81                                                                              | 0.78                                                                              | 0.65                                                                              | 0.65                                                                              |      |
| v/c Ratio               | 0.53                                                                              | 0.61                                                                              | 0.40                                                                              | 0.29                                                                              | 0.60                                                                              | 0.07                                                                              |      |
| Control Delay           | 54.1                                                                              | 13.5                                                                              | 6.3                                                                               | 3.0                                                                               | 10.5                                                                              | 5.2                                                                               |      |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |      |
| Total Delay             | 54.1                                                                              | 13.5                                                                              | 6.3                                                                               | 3.0                                                                               | 10.5                                                                              | 5.2                                                                               |      |
| LOS                     | D                                                                                 | B                                                                                 | A                                                                                 | A                                                                                 | B                                                                                 | A                                                                                 |      |
| Approach Delay          | 26.2                                                                              |                                                                                   |                                                                                   | 3.7                                                                               | 10.0                                                                              |                                                                                   |      |
| Approach LOS            | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 | B                                                                                 |                                                                                   |      |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive Lanes, Volumes, Timings

2040 Improved Concept B  
Timing Plan: Weekday Midday

|                         |  |  |  |  |  |  |    |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3 |
| Queue Length 50th (ft)  | 63                                                                                | 0                                                                                 | 18                                                                                | 48                                                                                | 149                                                                               | 7                                                                                 |    |
| Queue Length 95th (ft)  | 102                                                                               | 48                                                                                | 55                                                                                | 71                                                                                | 208                                                                               | m17                                                                               |    |
| Internal Link Dist (ft) | 365                                                                               |                                                                                   |                                                                                   | 430                                                                               | 261                                                                               |                                                                                   |    |
| Turn Bay Length (ft)    |                                                                                   | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   | 50                                                                                |    |
| Base Capacity (vph)     | 184                                                                               | 356                                                                               | 517                                                                               | 2653                                                                              | 1200                                                                              | 1027                                                                              |    |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |    |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |    |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |    |
| Reduced v/c Ratio       | 0.53                                                                              | 0.61                                                                              | 0.39                                                                              | 0.29                                                                              | 0.60                                                                              | 0.07                                                                              |    |

## Intersection Summary

Area Type: Other  
Cycle Length: 105  
Actuated Cycle Length: 105  
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow, Master Intersection  
Natural Cycle: 90  
Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 0.61  
Intersection Signal Delay: 9.5  
Intersection Capacity Utilization 66.6%  
Analysis Period (min) 15  
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

|                                                                                            |                                                                                            |                                                                                          |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø3 |  Ø4 |
| 14 s                                                                                       | 57 s                                                                                       | 22 s                                                                                     | 12 s                                                                                     |
|  Ø6 (R) |                                                                                            |                                                                                          |                                                                                          |
| 71 s                                                                                       |                                                                                            |                                                                                          |                                                                                          |

# 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Drive 2040 Improved Concept B Lanes, Volumes, Timings

Timing Plan: Weekday Midday

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 68                                                                                | 1                                                                                 | 49                                                                                | 4                                                                                 | 0                                                                                 | 25                                                                                | 54                                                                                 | 767                                                                                 | 0                                                                                   | 2                                                                                   | 792                                                                                 | 89                                                                                  |
| Future Volume (vph)     | 68                                                                                | 1                                                                                 | 49                                                                                | 4                                                                                 | 0                                                                                 | 25                                                                                | 54                                                                                 | 767                                                                                 | 0                                                                                   | 2                                                                                   | 792                                                                                 | 89                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                 | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 50                                                                                |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 200                                                                                 |                                                                                     | 0                                                                                   |
| Storage Lanes           | 1                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 50                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 50                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                               | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Frt                     |                                                                                   | 0.870                                                                             |                                                                                   |                                                                                   | 0.884                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.985                                                                               |                                                                                     |
| Flt Protected           | 0.950                                                                             | 0.994                                                                             |                                                                                   |                                                                                   | 0.993                                                                             |                                                                                   |                                                                                    | 0.997                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1887                                                                              | 1515                                                                              | 0                                                                                 | 0                                                                                 | 1835                                                                              | 0                                                                                 | 0                                                                                  | 3494                                                                                | 0                                                                                   | 0                                                                                   | 3452                                                                                | 0                                                                                   |
| Flt Permitted           | 0.950                                                                             | 0.994                                                                             |                                                                                   |                                                                                   | 0.993                                                                             |                                                                                   |                                                                                    | 0.813                                                                               |                                                                                     |                                                                                     | 0.954                                                                               |                                                                                     |
| Satd. Flow (perm)       | 1887                                                                              | 1515                                                                              | 0                                                                                 | 0                                                                                 | 1835                                                                              | 0                                                                                 | 0                                                                                  | 2849                                                                                | 0                                                                                   | 0                                                                                   | 3293                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 57                                                                                |                                                                                   |                                                                                   | 128                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 20                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 347                                                                               |                                                                                   |                                                                                   | 133                                                                               |                                                                                   |                                                                                    | 293                                                                                 |                                                                                     |                                                                                     | 336                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.5                                                                               |                                                                                   |                                                                                   | 3.6                                                                               |                                                                                   |                                                                                    | 6.7                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.83                                                                               | 0.83                                                                                | 0.83                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                |
| Heavy Vehicles (%)      | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                 | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  |
| Adj. Flow (vph)         | 79                                                                                | 1                                                                                 | 57                                                                                | 5                                                                                 | 0                                                                                 | 31                                                                                | 65                                                                                 | 924                                                                                 | 0                                                                                   | 2                                                                                   | 808                                                                                 | 91                                                                                  |
| Shared Lane Traffic (%) | 10%                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 71                                                                                | 66                                                                                | 0                                                                                 | 0                                                                                 | 36                                                                                | 0                                                                                 | 0                                                                                  | 989                                                                                 | 0                                                                                   | 0                                                                                   | 901                                                                                 | 0                                                                                   |
| Turn Type               | Split                                                                             | NA                                                                                |                                                                                   | Split                                                                             | NA                                                                                |                                                                                   | pm+pt                                                                              | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        | 4                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 2                                                                                  |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 4                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                                | 15.0                                                                                |                                                                                     | 15.0                                                                                | 15.0                                                                                |                                                                                     |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              |                                                                                   | 9.0                                                                               | 9.0                                                                               |                                                                                   | 10.9                                                                               | 20.4                                                                                |                                                                                     | 20.4                                                                                | 20.4                                                                                |                                                                                     |
| Total Split (s)         | 16.0                                                                              | 16.0                                                                              |                                                                                   | 10.0                                                                              | 10.0                                                                              |                                                                                   | 10.9                                                                               | 79.0                                                                                |                                                                                     | 68.1                                                                                | 68.1                                                                                |                                                                                     |
| Total Split (%)         | 15.2%                                                                             | 15.2%                                                                             |                                                                                   | 9.5%                                                                              | 9.5%                                                                              |                                                                                   | 10.4%                                                                              | 75.2%                                                                               |                                                                                     | 64.9%                                                                               | 64.9%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 4.2                                                                                | 4.2                                                                                 |                                                                                     | 4.2                                                                                 | 4.2                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               |                                                                                   | 1.0                                                                               | 1.0                                                                               |                                                                                   | 1.7                                                                                | 1.2                                                                                 |                                                                                     | 1.2                                                                                 | 1.2                                                                                 |                                                                                     |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                    | 5.4                                                                                 |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Lag                                                                                |                                                                                     |                                                                                     | Lead                                                                                | Lead                                                                                |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Yes                                                                                |                                                                                     |                                                                                     | Yes                                                                                 | Yes                                                                                 |                                                                                     |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              |                                                                                   | None                                                                               | C-Min                                                                               |                                                                                     | C-Min                                                                               | C-Min                                                                               |                                                                                     |
| Act Effect Green (s)    | 9.7                                                                               | 9.7                                                                               |                                                                                   |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                    | 83.8                                                                                |                                                                                     |                                                                                     | 83.8                                                                                |                                                                                     |
| Actuated g/C Ratio      | 0.09                                                                              | 0.09                                                                              |                                                                                   |                                                                                   | 0.05                                                                              |                                                                                   |                                                                                    | 0.80                                                                                |                                                                                     |                                                                                     | 0.80                                                                                |                                                                                     |
| v/c Ratio               | 0.41                                                                              | 0.35                                                                              |                                                                                   |                                                                                   | 0.16                                                                              |                                                                                   |                                                                                    | 0.44                                                                                |                                                                                     |                                                                                     | 0.34                                                                                |                                                                                     |
| Control Delay           | 52.0                                                                              | 19.8                                                                              |                                                                                   |                                                                                   | 1.6                                                                               |                                                                                   |                                                                                    | 3.3                                                                                 |                                                                                     |                                                                                     | 1.5                                                                                 |                                                                                     |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             | 52.0                                                                              | 19.9                                                                              |                                                                                   |                                                                                   | 1.6                                                                               |                                                                                   |                                                                                    | 3.3                                                                                 |                                                                                     |                                                                                     | 1.5                                                                                 |                                                                                     |
| LOS                     | D                                                                                 | B                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 36.5                                                                              |                                                                                   |                                                                                   | 1.6                                                                               |                                                                                   |                                                                                    | 3.3                                                                                 |                                                                                     |                                                                                     | 1.5                                                                                 |                                                                                     |
| Approach LOS            |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |

# 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Driveway 2040 Improved Concept B Lanes, Volumes, Timings

Timing Plan: Weekday Midday

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  | 48                                                                                | 6                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 55                                                                                  |                                                                                     |                                                                                     | 15                                                                                  |                                                                                     |
| Queue Length 95th (ft)  | 89                                                                                | 44                                                                                |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 39                                                                                  |                                                                                     |                                                                                     | 51                                                                                  |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 267                                                                               |                                                                                   |                                                                                   | 53                                                                                |                                                                                   |                                                                                    | 213                                                                                 |                                                                                     |                                                                                     | 256                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 215                                                                               | 223                                                                               |                                                                                   |                                                                                   | 225                                                                               |                                                                                   |                                                                                    | 2273                                                                                |                                                                                     |                                                                                     | 2632                                                                                |                                                                                     |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 165                                                                                 |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   | 0                                                                                 | 2                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       | 0.33                                                                              | 0.30                                                                              |                                                                                   |                                                                                   | 0.16                                                                              |                                                                                   |                                                                                    | 0.47                                                                                |                                                                                     |                                                                                     | 0.34                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 105

Actuated Cycle Length: 105

Offset: 47 (45%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.44

Intersection Signal Delay: 4.7

Intersection LOS: A

Intersection Capacity Utilization 70.0%

ICU Level of Service C

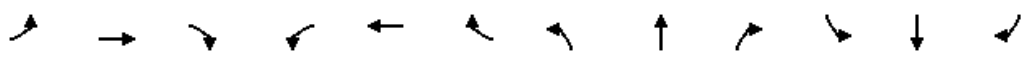
Analysis Period (min) 15

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Driveway

|                                                                                            |                                                                                          |                                                                                          |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø2 (R) |  Ø4 |  Ø8 |
| 79 s                                                                                       | 16 s                                                                                     | 10 s                                                                                     |
|  Ø6 (R) |  Ø5 |                                                                                          |
| 68.1 s                                                                                     | 10.9 s                                                                                   |                                                                                          |

# 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Road Concept B Lanes, Volumes, Timings

Timing Plan: Weekday Midday

|                         |  |       |       |       |       |       |       |       |      |       |       |      |
|-------------------------|------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|------|
| Lane Group              | EBL                                                                                | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
| Lane Configurations     |                                                                                    |       |       |       |       |       |       |       |      |       |       |      |
| Traffic Volume (vph)    | 15                                                                                 | 3     | 33    | 149   | 4     | 65    | 31    | 674   | 54   | 88    | 732   | 22   |
| Future Volume (vph)     | 15                                                                                 | 3     | 33    | 149   | 4     | 65    | 31    | 674   | 54   | 88    | 732   | 22   |
| Ideal Flow (vphpl)      | 1900                                                                               | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12                                                                                 | 12    | 12    | 12    | 12    | 11    | 12    | 11    | 12   | 12    | 11    | 12   |
| Storage Length (ft)     | 0                                                                                  |       | 0     | 0     |       | 75    | 200   |       | 0    | 0     |       | 0    |
| Storage Lanes           | 0                                                                                  |       | 1     | 0     |       | 1     | 1     |       | 0    | 1     |       | 0    |
| Taper Length (ft)       | 25                                                                                 |       |       | 25    |       |       | 25    |       |      | 25    |       |      |
| Lane Util. Factor       | 1.00                                                                               | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 0.95  | 0.95 | 1.00  | 1.00  | 1.00 |
| Frt                     |                                                                                    |       | 0.850 |       |       | 0.850 |       | 0.989 |      |       | 0.996 |      |
| Flt Protected           |                                                                                    | 0.960 |       |       | 0.954 |       | 0.950 |       |      | 0.950 |       |      |
| Satd. Flow (prot)       | 0                                                                                  | 1788  | 1583  | 0     | 1777  | 1531  | 1770  | 3384  | 0    | 1770  | 1793  | 0    |
| Flt Permitted           |                                                                                    | 0.764 |       |       | 0.715 |       | 0.335 |       |      | 0.278 |       |      |
| Satd. Flow (perm)       | 0                                                                                  | 1423  | 1583  | 0     | 1332  | 1531  | 624   | 3384  | 0    | 518   | 1793  | 0    |
| Right Turn on Red       |                                                                                    |       | Yes   |       |       | No    |       |       | Yes  |       |       | Yes  |
| Satd. Flow (RTOR)       |                                                                                    |       | 91    |       |       |       |       | 12    |      |       | 3     |      |
| Link Speed (mph)        |                                                                                    | 30    |       |       | 25    |       |       | 30    |      |       | 30    |      |
| Link Distance (ft)      |                                                                                    | 97    |       |       | 499   |       |       | 535   |      |       | 293   |      |
| Travel Time (s)         |                                                                                    | 2.2   |       |       | 13.6  |       |       | 12.2  |      |       | 6.7   |      |
| Peak Hour Factor        | 0.80                                                                               | 0.80  | 0.80  | 0.80  | 0.80  | 0.80  | 0.89  | 0.89  | 0.89 | 0.96  | 0.96  | 0.96 |
| Adj. Flow (vph)         | 19                                                                                 | 4     | 41    | 186   | 5     | 81    | 35    | 757   | 61   | 92    | 763   | 23   |
| Shared Lane Traffic (%) |                                                                                    |       |       |       |       |       |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 0                                                                                  | 23    | 41    | 0     | 191   | 81    | 35    | 818   | 0    | 92    | 786   | 0    |
| Turn Type               | Perm                                                                               | NA    | Perm  | Perm  | NA    | Perm  | Perm  | NA    |      | pm+pt | NA    |      |
| Protected Phases        |                                                                                    | 4     |       |       | 8     |       |       | 2     |      | 1     | 6     |      |
| Permitted Phases        | 4                                                                                  |       | 4     | 8     |       | 8     | 2     |       |      | 6     |       |      |
| Detector Phase          | 4                                                                                  | 4     | 4     | 8     | 8     | 8     | 2     | 2     |      | 1     | 6     |      |
| Switch Phase            |                                                                                    |       |       |       |       |       |       |       |      |       |       |      |
| Minimum Initial (s)     | 9.0                                                                                | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 15.0  | 15.0  |      | 3.0   | 15.0  |      |
| Minimum Split (s)       | 13.0                                                                               | 13.0  | 13.0  | 13.0  | 13.0  | 13.0  | 20.3  | 20.3  |      | 9.5   | 20.3  |      |
| Total Split (s)         | 32.0                                                                               | 32.0  | 32.0  | 32.0  | 32.0  | 32.0  | 60.0  | 60.0  |      | 13.0  | 73.0  |      |
| Total Split (%)         | 30.5%                                                                              | 30.5% | 30.5% | 30.5% | 30.5% | 30.5% | 57.1% | 57.1% |      | 12.4% | 69.5% |      |
| Yellow Time (s)         | 3.0                                                                                | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 4.3   | 4.3   |      | 4.3   | 4.3   |      |
| All-Red Time (s)        | 1.0                                                                                | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |      | 2.2   | 1.0   |      |
| Lost Time Adjust (s)    |                                                                                    | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   | 0.0   |      | 0.0   | 0.0   |      |
| Total Lost Time (s)     |                                                                                    | 4.0   | 4.0   |       | 4.0   | 4.0   | 5.3   | 5.3   |      | 6.5   | 5.3   |      |
| Lead/Lag                |                                                                                    |       |       |       |       |       | Lag   | Lag   |      | Lead  |       |      |
| Lead-Lag Optimize?      |                                                                                    |       |       |       |       |       | Yes   | Yes   |      | Yes   |       |      |
| Recall Mode             | None                                                                               | None  | None  | None  | None  | None  | C-Max | C-Max |      | None  | C-Max |      |
| Act Effct Green (s)     |                                                                                    | 19.4  | 19.4  |       | 19.4  | 19.4  | 66.6  | 66.6  |      | 75.1  | 76.3  |      |
| Actuated g/C Ratio      |                                                                                    | 0.18  | 0.18  |       | 0.18  | 0.18  | 0.63  | 0.63  |      | 0.72  | 0.73  |      |
| v/c Ratio               |                                                                                    | 0.09  | 0.11  |       | 0.78  | 0.29  | 0.09  | 0.38  |      | 0.21  | 0.60  |      |
| Control Delay           |                                                                                    | 33.0  | 0.6   |       | 60.9  | 37.4  | 11.5  | 11.4  |      | 5.3   | 5.8   |      |
| Queue Delay             |                                                                                    | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   | 0.0   |      | 0.0   | 0.0   |      |
| Total Delay             |                                                                                    | 33.0  | 0.6   |       | 60.9  | 37.4  | 11.5  | 11.4  |      | 5.3   | 5.8   |      |
| LOS                     |                                                                                    | C     | A     |       | E     | D     | B     | B     |      | A     | A     |      |
| Approach Delay          |                                                                                    | 12.2  |       |       | 53.9  |       |       | 11.4  |      |       | 5.7   |      |
| Approach LOS            |                                                                                    | B     |       |       | D     |       |       | B     |      |       | A     |      |
| Queue Length 50th (ft)  |                                                                                    | 13    | 0     |       | 123   | 47    | 9     | 133   |      | 6     | 45    |      |



# 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road Concept B Lanes, Volumes, Timings

Timing Plan: Weekday Midday

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 29                                                                                | 0                                                                                 |                                                                                   | 160                                                                               | 73                                                                                | 29                                                                                 | 217                                                                                 |                                                                                     | 35                                                                                  | 194                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 17                                                                                |                                                                                   |                                                                                   | 419                                                                               |                                                                                   |                                                                                    | 455                                                                                 |                                                                                     |                                                                                     | 213                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 75                                                                                | 200                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 379                                                                               | 488                                                                               |                                                                                   | 355                                                                               | 408                                                                               | 395                                                                                | 2150                                                                                |                                                                                     | 449                                                                                 | 1303                                                                                |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 3                                                                                   |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.06                                                                              | 0.08                                                                              |                                                                                   | 0.54                                                                              | 0.20                                                                              | 0.09                                                                               | 0.38                                                                                |                                                                                     | 0.20                                                                                | 0.60                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 105

Actuated Cycle Length: 105

Offset: 2 (2%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 14.6

Intersection LOS: B

Intersection Capacity Utilization 79.7%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road

|                                                                                            |                                                                                           |                                                                                        |
|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
|  Ø1      |  Ø2 (R) |  Ø4 |
| 13 s                                                                                       | 60 s                                                                                      | 32 s                                                                                   |
|  Ø6 (R) |  Ø8   |                                                                                        |
| 73 s                                                                                       | 32 s                                                                                      |                                                                                        |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Improved Concept B Lanes, Volumes, Timings

Timing Plan: Weekday Midday

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (vph)    | 79                                                                                | 563                                                                               | 193                                                                               | 126                                                                               | 585                                                                               | 109                                                                               | 207                                                                                | 204                                                                                 | 133                                                                                 | 178                                                                                 | 196                                                                                 | 55                                                                                  |
| Future Volume (vph)     | 79                                                                                | 563                                                                               | 193                                                                               | 126                                                                               | 585                                                                               | 109                                                                               | 207                                                                                | 204                                                                                 | 133                                                                                 | 178                                                                                 | 196                                                                                 | 55                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 11                                                                                | 11                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                 | 11                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 200                                                                               |                                                                                   | 325                                                                               | 200                                                                               |                                                                                   | 0                                                                                 | 400                                                                                |                                                                                     | 75                                                                                  | 170                                                                                 |                                                                                     | 75                                                                                  |
| Storage Lanes           | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                  |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)       | 85                                                                                |                                                                                   |                                                                                   | 50                                                                                |                                                                                   |                                                                                   | 100                                                                                |                                                                                     |                                                                                     | 100                                                                                 |                                                                                     |                                                                                     |
| Lane Util. Factor       | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.962                                                                             |                                                                                   |                                                                                   | 0.976                                                                             |                                                                                   |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                              |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1711                                                                              | 3291                                                                              | 0                                                                                 | 1711                                                                              | 3454                                                                              | 0                                                                                 | 1711                                                                               | 1801                                                                                | 1583                                                                                | 1770                                                                                | 1863                                                                                | 1583                                                                                |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.455                                                                              |                                                                                     |                                                                                     | 0.625                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 1711                                                                              | 3291                                                                              | 0                                                                                 | 1711                                                                              | 3454                                                                              | 0                                                                                 | 819                                                                                | 1801                                                                                | 1583                                                                                | 1164                                                                                | 1863                                                                                | 1583                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | No                                                                                  |
| Satd. Flow (RTOR)       |                                                                                   | 39                                                                                |                                                                                   |                                                                                   | 18                                                                                |                                                                                   |                                                                                    |                                                                                     | 157                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 628                                                                               |                                                                                   |                                                                                   | 408                                                                               |                                                                                   |                                                                                    | 637                                                                                 |                                                                                     |                                                                                     | 355                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 14.3                                                                              |                                                                                   |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                    | 14.5                                                                                |                                                                                     |                                                                                     | 9.7                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.96                                                                               | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Adj. Flow (vph)         | 87                                                                                | 619                                                                               | 212                                                                               | 135                                                                               | 629                                                                               | 117                                                                               | 216                                                                                | 213                                                                                 | 139                                                                                 | 185                                                                                 | 204                                                                                 | 57                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 87                                                                                | 831                                                                               | 0                                                                                 | 135                                                                               | 746                                                                               | 0                                                                                 | 216                                                                                | 213                                                                                 | 139                                                                                 | 185                                                                                 | 204                                                                                 | 57                                                                                  |
| Turn Type               | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | NA                                                                                |                                                                                   | pm+pt                                                                              | NA                                                                                  | Perm                                                                                | pm+pt                                                                               | NA                                                                                  | Perm                                                                                |
| Protected Phases        | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 7                                                                                  | 4                                                                                   |                                                                                     | 3                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 4                                                                                  |                                                                                     | 4                                                                                   | 8                                                                                   |                                                                                     | 8                                                                                   |
| Detector Phase          | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 7                                                                                  | 4                                                                                   | 4                                                                                   | 3                                                                                   | 8                                                                                   | 8                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 15.0                                                                              |                                                                                   | 5.0                                                                               | 15.0                                                                              |                                                                                   | 5.0                                                                                | 10.0                                                                                | 10.0                                                                                | 5.0                                                                                 | 10.0                                                                                | 10.0                                                                                |
| Minimum Split (s)       | 9.7                                                                               | 21.6                                                                              |                                                                                   | 9.7                                                                               | 21.6                                                                              |                                                                                   | 9.3                                                                                | 16.8                                                                                | 16.8                                                                                | 9.3                                                                                 | 16.8                                                                                | 16.8                                                                                |
| Total Split (s)         | 11.8                                                                              | 33.8                                                                              |                                                                                   | 14.4                                                                              | 36.4                                                                              |                                                                                   | 13.7                                                                               | 22.4                                                                                | 22.4                                                                                | 11.4                                                                                | 20.1                                                                                | 20.1                                                                                |
| Total Split (%)         | 10.3%                                                                             | 29.4%                                                                             |                                                                                   | 12.5%                                                                             | 31.7%                                                                             |                                                                                   | 11.9%                                                                              | 19.5%                                                                               | 19.5%                                                                               | 9.9%                                                                                | 17.5%                                                                               | 17.5%                                                                               |
| Yellow Time (s)         | 3.0                                                                               | 4.1                                                                               |                                                                                   | 3.0                                                                               | 4.1                                                                               |                                                                                   | 3.3                                                                                | 4.4                                                                                 | 4.4                                                                                 | 3.3                                                                                 | 4.4                                                                                 | 4.4                                                                                 |
| All-Red Time (s)        | 1.7                                                                               | 2.5                                                                               |                                                                                   | 1.7                                                                               | 2.5                                                                               |                                                                                   | 1.0                                                                                | 2.4                                                                                 | 2.4                                                                                 | 1.0                                                                                 | 2.4                                                                                 | 2.4                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 4.7                                                                               | 6.6                                                                               |                                                                                   | 4.7                                                                               | 6.6                                                                               |                                                                                   | 4.3                                                                                | 6.8                                                                                 | 6.8                                                                                 | 4.3                                                                                 | 6.8                                                                                 | 6.8                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                               | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode             | None                                                                              | Min                                                                               |                                                                                   | None                                                                              | Min                                                                               |                                                                                   | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Act Effct Green (s)     | 7.1                                                                               | 27.2                                                                              |                                                                                   | 9.7                                                                               | 29.8                                                                              |                                                                                   | 27.3                                                                               | 15.4                                                                                | 15.4                                                                                | 22.7                                                                                | 13.1                                                                                | 13.1                                                                                |
| Actuated g/C Ratio      | 0.09                                                                              | 0.33                                                                              |                                                                                   | 0.12                                                                              | 0.36                                                                              |                                                                                   | 0.33                                                                               | 0.19                                                                                | 0.19                                                                                | 0.28                                                                                | 0.16                                                                                | 0.16                                                                                |
| v/c Ratio               | 0.59                                                                              | 0.74                                                                              |                                                                                   | 0.67                                                                              | 0.59                                                                              |                                                                                   | 0.58                                                                               | 0.63                                                                                | 0.33                                                                                | 0.49                                                                                | 0.68                                                                                | 0.22                                                                                |
| Control Delay           | 53.5                                                                              | 27.9                                                                              |                                                                                   | 52.3                                                                              | 22.9                                                                              |                                                                                   | 26.5                                                                               | 39.7                                                                                | 6.3                                                                                 | 25.0                                                                                | 45.4                                                                                | 32.5                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 53.5                                                                              | 27.9                                                                              |                                                                                   | 52.3                                                                              | 22.9                                                                              |                                                                                   | 26.5                                                                               | 39.7                                                                                | 6.3                                                                                 | 25.0                                                                                | 45.4                                                                                | 32.5                                                                                |
| LOS                     | D                                                                                 | C                                                                                 |                                                                                   | D                                                                                 | C                                                                                 |                                                                                   | C                                                                                  | D                                                                                   | A                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   |
| Approach Delay          |                                                                                   | 30.3                                                                              |                                                                                   |                                                                                   | 27.4                                                                              |                                                                                   |                                                                                    | 26.5                                                                                |                                                                                     |                                                                                     | 35.3                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Queue Length 50th (ft)  | 44                                                                                | 187                                                                               |                                                                                   | 67                                                                                | 156                                                                               |                                                                                   | 80                                                                                 | 101                                                                                 | 0                                                                                   | 67                                                                                  | 100                                                                                 | 26                                                                                  |

|                         |      |
|-------------------------|------|
| Lane Group              | Ø9   |
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 33.0 |
| Total Split (s)         | 33.0 |
| Total Split (%)         | 29%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Improved Concept B Lanes, Volumes, Timings

Timing Plan: Weekday MIDDAY

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  | #104                                                                              | 256                                                                               |                                                                                   | #146                                                                              | 213                                                                               |                                                                                   | 136                                                                                | 173                                                                                 | 37                                                                                  | 117                                                                                 | #187                                                                                | 59                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 548                                                                               |                                                                                   |                                                                                   | 328                                                                               |                                                                                   |                                                                                    | 557                                                                                 |                                                                                     |                                                                                     | 275                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 200                                                                               |                                                                                   |                                                                                   | 200                                                                               |                                                                                   |                                                                                   | 400                                                                                |                                                                                     | 75                                                                                  | 170                                                                                 |                                                                                     | 75                                                                                  |
| Base Capacity (vph)     | 148                                                                               | 1120                                                                              |                                                                                   | 202                                                                               | 1269                                                                              |                                                                                   | 375                                                                                | 343                                                                                 | 428                                                                                 | 376                                                                                 | 303                                                                                 | 257                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.59                                                                              | 0.74                                                                              |                                                                                   | 0.67                                                                              | 0.59                                                                              |                                                                                   | 0.58                                                                               | 0.62                                                                                | 0.32                                                                                | 0.49                                                                                | 0.67                                                                                | 0.22                                                                                |

## Intersection Summary

Area Type: Other

Cycle Length: 115

Actuated Cycle Length: 81.8

Natural Cycle: 115

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 29.4

Intersection LOS: C

Intersection Capacity Utilization 69.2%

ICU Level of Service C

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)

|                                                                                        |                                                                                        |                                                                                        |                                                                                          |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø9 |  Ø3 |  Ø4 |
| 14.4 s                                                                                 | 33.8 s                                                                                 | 33 s                                                                                   | 11.4 s                                                                                   | 22.4 s                                                                                   |
|  Ø5 |  Ø6 |                                                                                        |  Ø7 |  Ø8 |
| 11.8 s                                                                                 | 36.4 s                                                                                 |                                                                                        | 13.7 s                                                                                   | 20.1 s                                                                                   |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø9 |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & 2040-50 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday Midday

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |  |
| Traffic Volume (vph)    | 72                                                                                | 677                                                                               | 32                                                                                | 60                                                                                | 613                                                                               | 69                                                                                | 163                                                                                | 12                                                                                  | 82                                                                                  | 54                                                                                  | 13                                                                                  | 33                                                                                  |
| Future Volume (vph)     | 72                                                                                | 677                                                                               | 32                                                                                | 60                                                                                | 613                                                                               | 69                                                                                | 163                                                                                | 12                                                                                  | 82                                                                                  | 54                                                                                  | 13                                                                                  | 33                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                 | 13                                                                                  | 13                                                                                  | 12                                                                                  | 13                                                                                  | 13                                                                                  |
| Storage Length (ft)     | 0                                                                                 |                                                                                   | 0                                                                                 | 325                                                                               |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 25                                                                                  | 0                                                                                   |                                                                                     | 25                                                                                  |
| Storage Lanes           | 0                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 1                                                                                   | 0                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)       | 50                                                                                |                                                                                   |                                                                                   | 50                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.994                                                                             |                                                                                   |                                                                                   | 0.986                                                                             |                                                                                   |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected           |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                    | 0.956                                                                               |                                                                                     |                                                                                     | 0.961                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3351                                                                              | 0                                                                                 | 0                                                                                 | 3327                                                                              | 0                                                                                 | 0                                                                                  | 1822                                                                                | 1620                                                                                | 0                                                                                   | 1832                                                                                | 1620                                                                                |
| Flt Permitted           |                                                                                   | 0.795                                                                             |                                                                                   |                                                                                   | 0.811                                                                             |                                                                                   |                                                                                    | 0.686                                                                               |                                                                                     |                                                                                     | 0.703                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 2677                                                                              | 0                                                                                 | 0                                                                                 | 2709                                                                              | 0                                                                                 | 0                                                                                  | 1308                                                                                | 1620                                                                                | 0                                                                                   | 1340                                                                                | 1620                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 7                                                                                 |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                    |                                                                                     | 157                                                                                 |                                                                                     |                                                                                     | 157                                                                                 |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 401                                                                               |                                                                                   |                                                                                   | 502                                                                               |                                                                                   |                                                                                    | 123                                                                                 |                                                                                     |                                                                                     | 137                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.1                                                                               |                                                                                   |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                    | 3.4                                                                                 |                                                                                     |                                                                                     | 3.7                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.95                                                                               | 0.95                                                                                | 0.95                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                |
| Heavy Vehicles (%)      | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                 | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  |
| Adj. Flow (vph)         | 79                                                                                | 744                                                                               | 35                                                                                | 62                                                                                | 632                                                                               | 71                                                                                | 172                                                                                | 13                                                                                  | 86                                                                                  | 61                                                                                  | 15                                                                                  | 38                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 858                                                                               | 0                                                                                 | 0                                                                                 | 765                                                                               | 0                                                                                 | 0                                                                                  | 185                                                                                 | 86                                                                                  | 0                                                                                   | 76                                                                                  | 38                                                                                  |
| Turn Type               | pm+pt                                                                             | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  | Perm                                                                                | Perm                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases        | 1                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                  |                                                                                     | 4                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   |
| Detector Phase          | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                  | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0                                                                                | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |
| Minimum Split (s)       | 9.0                                                                               | 20.8                                                                              |                                                                                   | 20.8                                                                              | 20.8                                                                              |                                                                                   | 11.0                                                                               | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                |
| Total Split (s)         | 9.0                                                                               | 39.0                                                                              |                                                                                   | 30.0                                                                              | 30.0                                                                              |                                                                                   | 14.0                                                                               | 14.0                                                                                | 14.0                                                                                | 14.0                                                                                | 14.0                                                                                | 14.0                                                                                |
| Total Split (%)         | 12.0%                                                                             | 52.0%                                                                             |                                                                                   | 40.0%                                                                             | 40.0%                                                                             |                                                                                   | 18.7%                                                                              | 18.7%                                                                               | 18.7%                                                                               | 18.7%                                                                               | 18.7%                                                                               | 18.7%                                                                               |
| Yellow Time (s)         | 3.0                                                                               | 4.3                                                                               |                                                                                   | 4.3                                                                               | 4.3                                                                               |                                                                                   | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| All-Red Time (s)        | 1.0                                                                               | 1.5                                                                               |                                                                                   | 1.5                                                                               | 1.5                                                                               |                                                                                   | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     |                                                                                   | 5.8                                                                               |                                                                                   |                                                                                   | 5.8                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 | 4.0                                                                                 |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |
| Lead/Lag                | Lead                                                                              |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               |                                                                                   | Lag                                                                                | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode             | Min                                                                               | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Act Effect Green (s)    |                                                                                   | 46.6                                                                              |                                                                                   |                                                                                   | 37.1                                                                              |                                                                                   |                                                                                    | 18.6                                                                                | 18.6                                                                                |                                                                                     | 18.6                                                                                | 18.6                                                                                |
| Actuated g/C Ratio      |                                                                                   | 0.62                                                                              |                                                                                   |                                                                                   | 0.49                                                                              |                                                                                   |                                                                                    | 0.25                                                                                | 0.25                                                                                |                                                                                     | 0.25                                                                                | 0.25                                                                                |
| v/c Ratio               |                                                                                   | 0.51                                                                              |                                                                                   |                                                                                   | 0.57                                                                              |                                                                                   |                                                                                    | 0.57                                                                                | 0.17                                                                                |                                                                                     | 0.23                                                                                | 0.07                                                                                |
| Control Delay           |                                                                                   | 8.9                                                                               |                                                                                   |                                                                                   | 9.1                                                                               |                                                                                   |                                                                                    | 32.3                                                                                | 1.2                                                                                 |                                                                                     | 24.2                                                                                | 0.3                                                                                 |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             |                                                                                   | 8.9                                                                               |                                                                                   |                                                                                   | 9.1                                                                               |                                                                                   |                                                                                    | 32.3                                                                                | 1.2                                                                                 |                                                                                     | 24.2                                                                                | 0.3                                                                                 |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   | A                                                                                   |                                                                                     | C                                                                                   | A                                                                                   |
| Approach Delay          |                                                                                   | 8.9                                                                               |                                                                                   |                                                                                   | 9.1                                                                               |                                                                                   |                                                                                    | 22.4                                                                                |                                                                                     |                                                                                     | 16.2                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & 2040-50 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday MIDDAY

| Lane Group              | Ø3   |
|-------------------------|------|
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Heavy Vehicles (%)      |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 3    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 22.0 |
| Total Split (s)         | 22.0 |
| Total Split (%)         | 29%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                | Lead |
| Lead-Lag Optimize?      | Yes  |
| Recall Mode             | None |
| Act Effect Green (s)    |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |



# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday MIDDAY

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  |                                                                                   | 92                                                                                |                                                                                   |                                                                                   | 48                                                                                |                                                                                   |                                                                                    | 76                                                                                  | 0                                                                                   |                                                                                     | 28                                                                                  | 0                                                                                   |
| Queue Length 95th (ft)  |                                                                                   | 138                                                                               |                                                                                   |                                                                                   | 108                                                                               |                                                                                   |                                                                                    | 135                                                                                 | 5                                                                                   |                                                                                     | 59                                                                                  | 0                                                                                   |
| Internal Link Dist (ft) |                                                                                   | 321                                                                               |                                                                                   |                                                                                   | 422                                                                               |                                                                                   |                                                                                    | 43                                                                                  |                                                                                     |                                                                                     | 57                                                                                  |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |
| Base Capacity (vph)     |                                                                                   | 1699                                                                              |                                                                                   |                                                                                   | 1347                                                                              |                                                                                   |                                                                                    | 324                                                                                 | 519                                                                                 |                                                                                     | 332                                                                                 | 519                                                                                 |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       |                                                                                   | 0.51                                                                              |                                                                                   |                                                                                   | 0.57                                                                              |                                                                                   |                                                                                    | 0.57                                                                                | 0.17                                                                                |                                                                                     | 0.23                                                                                | 0.07                                                                                |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 4 (5%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.57

Intersection Signal Delay: 11.2

Intersection LOS: B

Intersection Capacity Utilization 72.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                            |                                                                                        |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø3 |  Ø4 |
| 9 s                                                                                        | 30 s                                                                                       | 22 s                                                                                   | 14 s                                                                                     |
|  Ø6 (R) |                                                                                            |                                                                                        |                                                                                          |
| 39 s                                                                                       |                                                                                            |                                                                                        |                                                                                          |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø3 |
| Queue Length 50th (ft)  |    |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |

# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) 2040 Improved Concept B Lanes, Volumes, Timings

Timing Plan: Weekday Midday

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (vph)    | 16                                                                                | 724                                                                               | 107                                                                               | 47                                                                                | 684                                                                               | 5                                                                                 | 93                                                                                  | 11                                                                                  | 51                                                                                  | 7                                                                                   | 10                                                                                  | 12                                                                                  |
| Future Volume (vph)     | 16                                                                                | 724                                                                               | 107                                                                               | 47                                                                                | 684                                                                               | 5                                                                                 | 93                                                                                  | 11                                                                                  | 51                                                                                  | 7                                                                                   | 10                                                                                  | 12                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                  | 10                                                                                  | 10                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 0                                                                                 |                                                                                   | 0                                                                                 | 175                                                                               |                                                                                   | 0                                                                                 | 75                                                                                  |                                                                                     | 250                                                                                 | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes           | 0                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                   |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 50                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.981                                                                             |                                                                                   |                                                                                   | 0.999                                                                             |                                                                                   |                                                                                     | 0.876                                                                               |                                                                                     |                                                                                     | 0.920                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.999                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3320                                                                              | 0                                                                                 | 1752                                                                              | 1781                                                                              | 0                                                                                 | 1752                                                                                | 1508                                                                                | 0                                                                                   | 1752                                                                                | 1697                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.941                                                                             |                                                                                   | 0.294                                                                             |                                                                                   |                                                                                   | 0.739                                                                               |                                                                                     |                                                                                     | 0.709                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 3128                                                                              | 0                                                                                 | 542                                                                               | 1781                                                                              | 0                                                                                 | 1363                                                                                | 1508                                                                                | 0                                                                                   | 1308                                                                                | 1697                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 51                                                                                |                                                                                   |                                                                                   | 1                                                                                 |                                                                                   |                                                                                     | 61                                                                                  |                                                                                     |                                                                                     | 15                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 502                                                                               |                                                                                   |                                                                                   | 407                                                                               |                                                                                   |                                                                                     | 405                                                                                 |                                                                                     |                                                                                     | 198                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                     | 11.0                                                                                |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.84                                                                                | 0.84                                                                                | 0.84                                                                                | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                |
| Heavy Vehicles (%)      | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  | 3%                                                                                  |
| Adj. Flow (vph)         | 18                                                                                | 832                                                                               | 123                                                                               | 49                                                                                | 720                                                                               | 5                                                                                 | 111                                                                                 | 13                                                                                  | 61                                                                                  | 9                                                                                   | 13                                                                                  | 15                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 973                                                                               | 0                                                                                 | 49                                                                                | 725                                                                               | 0                                                                                 | 111                                                                                 | 74                                                                                  | 0                                                                                   | 9                                                                                   | 28                                                                                  | 0                                                                                   |
| Turn Type               | pm+pt                                                                             | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                                | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        | 1                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                     | 4                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   | 4                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 3.0                                                                               | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0                                                                                 | 7.0                                                                                 |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 7.3                                                                               | 21.3                                                                              |                                                                                   | 21.3                                                                              | 21.3                                                                              |                                                                                   | 11.9                                                                                | 11.9                                                                                |                                                                                     | 11.9                                                                                | 11.9                                                                                |                                                                                     |
| Total Split (s)         | 7.3                                                                               | 59.0                                                                              |                                                                                   | 51.7                                                                              | 51.7                                                                              |                                                                                   | 16.0                                                                                | 16.0                                                                                |                                                                                     | 16.0                                                                                | 16.0                                                                                |                                                                                     |
| Total Split (%)         | 9.7%                                                                              | 78.7%                                                                             |                                                                                   | 68.9%                                                                             | 68.9%                                                                             |                                                                                   | 21.3%                                                                               | 21.3%                                                                               |                                                                                     | 21.3%                                                                               | 21.3%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.3                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 3.0                                                                                 | 3.0                                                                                 |                                                                                     | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.0                                                                               | 1.3                                                                               |                                                                                   | 1.3                                                                               | 1.3                                                                               |                                                                                   | 1.9                                                                                 | 1.9                                                                                 |                                                                                     | 1.9                                                                                 | 1.9                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 6.3                                                                               |                                                                                   | 6.3                                                                               | 6.3                                                                               |                                                                                   | 4.9                                                                                 | 4.9                                                                                 |                                                                                     | 4.9                                                                                 | 4.9                                                                                 |                                                                                     |
| Lead/Lag                | Lead                                                                              |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | Max                                                                               | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                                | None                                                                                |                                                                                     | None                                                                                | None                                                                                |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 56.9                                                                              |                                                                                   | 45.4                                                                              | 45.4                                                                              |                                                                                   | 9.3                                                                                 | 9.3                                                                                 |                                                                                     | 9.3                                                                                 | 9.3                                                                                 |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.76                                                                              |                                                                                   | 0.61                                                                              | 0.61                                                                              |                                                                                   | 0.12                                                                                | 0.12                                                                                |                                                                                     | 0.12                                                                                | 0.12                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.41                                                                              |                                                                                   | 0.15                                                                              | 0.67                                                                              |                                                                                   | 0.66                                                                                | 0.31                                                                                |                                                                                     | 0.06                                                                                | 0.13                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 3.1                                                                               |                                                                                   | 4.2                                                                               | 7.0                                                                               |                                                                                   | 49.8                                                                                | 14.5                                                                                |                                                                                     | 28.6                                                                                | 19.7                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.2                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 3.1                                                                               |                                                                                   | 4.2                                                                               | 7.2                                                                               |                                                                                   | 49.8                                                                                | 14.5                                                                                |                                                                                     | 28.6                                                                                | 19.7                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   | D                                                                                   | B                                                                                   |                                                                                     | C                                                                                   | B                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 3.1                                                                               |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                     | 35.7                                                                                |                                                                                     |                                                                                     | 21.9                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                     | D                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |

# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) 2040 Improved Concept B Lanes, Volumes, Timings

Timing Plan: Weekday Midday

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  |                                                                                   | 44                                                                                |                                                                                   | 5                                                                                 | 68                                                                                |                                                                                   | 50                                                                                 | 5                                                                                   |                                                                                     | 4                                                                                   | 5                                                                                   |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 61                                                                                |                                                                                   | m7                                                                                | 88                                                                                |                                                                                   | 91                                                                                 | 35                                                                                  |                                                                                     | 14                                                                                  | 23                                                                                  |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 422                                                                               |                                                                                   |                                                                                   | 327                                                                               |                                                                                   |                                                                                    | 325                                                                                 |                                                                                     |                                                                                     | 118                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   | 175                                                                               |                                                                                   |                                                                                   | 75                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 2396                                                                              |                                                                                   | 328                                                                               | 1078                                                                              |                                                                                   | 201                                                                                | 275                                                                                 |                                                                                     | 193                                                                                 | 263                                                                                 |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 38                                                                                |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.41                                                                              |                                                                                   | 0.15                                                                              | 0.70                                                                              |                                                                                   | 0.55                                                                               | 0.27                                                                                |                                                                                     | 0.05                                                                                | 0.11                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 2 (3%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 8.1

Intersection LOS: A

Intersection Capacity Utilization 60.2%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                            |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø4 |
| 7.3 s                                                                                      | 51.7 s                                                                                     | 16 s                                                                                     |
|  Ø6 (R) |                                                                                            |                                                                                          |
| 59 s                                                                                       |                                                                                            |                                                                                          |

## 108: Burroughs Road &amp; Route 58 (Black Rock Turnpike)

## 2040 Improved Concept B

## Lanes, Volumes, Timings

Timing Plan: Weekday Midday

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |  |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 62                                                                                | 753                                                                               | 12                                                                                | 5                                                                                 | 674                                                                               | 113                                                                               | 14                                                                                 | 59                                                                                  | 7                                                                                   | 118                                                                                 | 51                                                                                  | 47                                                                                  |
| Future Volume (vph)     | 62                                                                                | 753                                                                               | 12                                                                                | 5                                                                                 | 674                                                                               | 113                                                                               | 14                                                                                 | 59                                                                                  | 7                                                                                   | 118                                                                                 | 51                                                                                  | 47                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                 | 16                                                                                  | 12                                                                                  | 12                                                                                  | 16                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 150                                                                               | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes           | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 1                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 50                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 50                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                    | 0.988                                                                               |                                                                                     |                                                                                     | 0.970                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 0.991                                                                               |                                                                                     |                                                                                     | 0.973                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3335                                                                              | 0                                                                                 | 0                                                                                 | 1766                                                                              | 1553                                                                              | 0                                                                                  | 2027                                                                                | 0                                                                                   | 0                                                                                   | 1954                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.831                                                                             |                                                                                   |                                                                                   | 0.994                                                                             |                                                                                   |                                                                                    | 0.919                                                                               |                                                                                     |                                                                                     | 0.812                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 2783                                                                              | 0                                                                                 | 0                                                                                 | 1755                                                                              | 1553                                                                              | 0                                                                                  | 1880                                                                                | 0                                                                                   | 0                                                                                   | 1631                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 3                                                                                 |                                                                                   |                                                                                   |                                                                                   | 118                                                                               |                                                                                    | 6                                                                                   |                                                                                     |                                                                                     | 18                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 407                                                                               |                                                                                   |                                                                                   | 390                                                                               |                                                                                   |                                                                                    | 466                                                                                 |                                                                                     |                                                                                     | 265                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                   | 8.9                                                                               |                                                                                   |                                                                                    | 12.7                                                                                |                                                                                     |                                                                                     | 7.2                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.80                                                                               | 0.80                                                                                | 0.80                                                                                | 0.83                                                                                | 0.83                                                                                | 0.83                                                                                |
| Heavy Vehicles (%)      | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                | 4%                                                                                 | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  | 4%                                                                                  |
| Adj. Flow (vph)         | 72                                                                                | 876                                                                               | 14                                                                                | 5                                                                                 | 702                                                                               | 118                                                                               | 18                                                                                 | 74                                                                                  | 9                                                                                   | 142                                                                                 | 61                                                                                  | 57                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 962                                                                               | 0                                                                                 | 0                                                                                 | 707                                                                               | 118                                                                               | 0                                                                                  | 101                                                                                 | 0                                                                                   | 0                                                                                   | 260                                                                                 | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                | Perm                                                                              | Perm                                                                               | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   | 2                                                                                 | 4                                                                                  |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 6                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 | 2                                                                                 | 4                                                                                  | 4                                                                                   |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 15.0                                                                              | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              | 15.0                                                                              | 9.0                                                                                | 9.0                                                                                 |                                                                                     | 9.0                                                                                 | 9.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 20.6                                                                              | 20.6                                                                              |                                                                                   | 20.6                                                                              | 20.6                                                                              | 20.6                                                                              | 23.4                                                                               | 23.4                                                                                |                                                                                     | 14.4                                                                                | 14.4                                                                                |                                                                                     |
| Total Split (s)         | 51.0                                                                              | 51.0                                                                              |                                                                                   | 51.0                                                                              | 51.0                                                                              | 51.0                                                                              | 24.0                                                                               | 24.0                                                                                |                                                                                     | 24.0                                                                                | 24.0                                                                                |                                                                                     |
| Total Split (%)         | 68.0%                                                                             | 68.0%                                                                             |                                                                                   | 68.0%                                                                             | 68.0%                                                                             | 68.0%                                                                             | 32.0%                                                                              | 32.0%                                                                               |                                                                                     | 32.0%                                                                               | 32.0%                                                                               |                                                                                     |
| Yellow Time (s)         | 4.1                                                                               | 4.1                                                                               |                                                                                   | 4.1                                                                               | 4.1                                                                               | 4.1                                                                               | 3.1                                                                                | 3.1                                                                                 |                                                                                     | 3.1                                                                                 | 3.1                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.5                                                                               | 1.5                                                                               |                                                                                   | 1.5                                                                               | 1.5                                                                               | 1.5                                                                               | 2.3                                                                                | 2.3                                                                                 |                                                                                     | 2.3                                                                                 | 2.3                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   | 5.6                                                                               | 5.6                                                                               |                                                                                    | 5.4                                                                                 |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | C-Max                                                                             | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             | C-Max                                                                             | None                                                                               | None                                                                                |                                                                                     | None                                                                                | None                                                                                |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 49.1                                                                              |                                                                                   |                                                                                   | 49.1                                                                              | 49.1                                                                              |                                                                                    | 14.9                                                                                |                                                                                     |                                                                                     | 14.9                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.65                                                                              |                                                                                   |                                                                                   | 0.65                                                                              | 0.65                                                                              |                                                                                    | 0.20                                                                                |                                                                                     |                                                                                     | 0.20                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.53                                                                              |                                                                                   |                                                                                   | 0.62                                                                              | 0.11                                                                              |                                                                                    | 0.27                                                                                |                                                                                     |                                                                                     | 0.77                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 5.3                                                                               |                                                                                   |                                                                                   | 11.3                                                                              | 1.6                                                                               |                                                                                    | 24.4                                                                                |                                                                                     |                                                                                     | 41.6                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 5.3                                                                               |                                                                                   |                                                                                   | 11.3                                                                              | 1.6                                                                               |                                                                                    | 24.4                                                                                |                                                                                     |                                                                                     | 41.6                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 | A                                                                                 |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 5.3                                                                               |                                                                                   |                                                                                   | 9.9                                                                               |                                                                                   |                                                                                    | 24.4                                                                                |                                                                                     |                                                                                     | 41.6                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |

108: Burroughs Road & Route 58 (Black Rock Turnpike)  
Lanes, Volumes, Timings

2040 Improved Concept B  
Timing Plan: Weekday Midday

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 50th (ft)  |                                                                                   | 47                                                                                |                                                                                   |                                                                                   | 170                                                                               | 0                                                                                 |                                                                                    | 37                                                                                  |                                                                                     |                                                                                     | 106                                                                                 |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 64                                                                                |                                                                                   |                                                                                   | 310                                                                               | 18                                                                                |                                                                                    | 64                                                                                  |                                                                                     |                                                                                     | 158                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 327                                                                               |                                                                                   |                                                                                   | 310                                                                               |                                                                                   |                                                                                    | 386                                                                                 |                                                                                     |                                                                                     | 185                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 150                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 1824                                                                              |                                                                                   |                                                                                   | 1149                                                                              | 1058                                                                              |                                                                                    | 470                                                                                 |                                                                                     |                                                                                     | 418                                                                                 |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 70                                                                                |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.55                                                                              |                                                                                   |                                                                                   | 0.62                                                                              | 0.11                                                                              |                                                                                    | 0.21                                                                                |                                                                                     |                                                                                     | 0.62                                                                                |                                                                                     |

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow, Master Intersection

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 12.4

Intersection LOS: B

Intersection Capacity Utilization 91.3%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                       |
|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  Ø2 (R) |  |
| 51 s                                                                                       | 24 s                                                                                  |
|  Ø6 (R) |  |
| 51 s                                                                                       | 24 s                                                                                  |

201: Tunxis Hill Road & Route 58 (Tunxis Hill Cutoff)  
Lanes, Volumes, Timings

2040 Improved Concept B  
Timing Plan: Weekday MIDDAY

|                         | →     | ↘    | ↙    | ←     | ↖     | ↗     |
|-------------------------|-------|------|------|-------|-------|-------|
| Lane Group              | EBT   | EBR  | WBL  | WBT   | NBL   | NBR   |
| Lane Configurations     | ↑↑    |      |      | ↑     | ↑     | ↑     |
| Traffic Volume (vph)    | 440   | 11   | 36   | 411   | 3     | 61    |
| Future Volume (vph)     | 440   | 11   | 36   | 411   | 3     | 61    |
| Ideal Flow (vphpl)      | 1900  | 1900 | 1900 | 1900  | 1900  | 1900  |
| Lane Width (ft)         | 11    | 12   | 12   | 11    | 10    | 10    |
| Storage Length (ft)     |       | 0    | 0    |       | 0     | 50    |
| Storage Lanes           |       | 0    | 0    |       | 1     | 1     |
| Taper Length (ft)       |       |      | 25   |       | 25    |       |
| Lane Util. Factor       | 0.95  | 0.95 | 1.00 | 1.00  | 1.00  | 1.00  |
| Frt                     | 0.996 |      |      |       |       | 0.850 |
| Flt Protected           |       |      |      | 0.996 | 0.950 |       |
| Satd. Flow (prot)       | 3374  | 0    | 0    | 1776  | 1636  | 1463  |
| Flt Permitted           |       |      |      | 0.996 | 0.950 |       |
| Satd. Flow (perm)       | 3374  | 0    | 0    | 1776  | 1636  | 1463  |
| Link Speed (mph)        | 30    |      |      | 30    | 25    |       |
| Link Distance (ft)      | 1095  |      |      | 214   | 782   |       |
| Travel Time (s)         | 24.9  |      |      | 4.9   | 21.3  |       |
| Peak Hour Factor        | 0.85  | 0.85 | 0.86 | 0.86  | 0.88  | 0.88  |
| Heavy Vehicles (%)      | 3%    | 3%   | 3%   | 3%    | 3%    | 3%    |
| Adj. Flow (vph)         | 518   | 13   | 42   | 478   | 3     | 69    |
| Shared Lane Traffic (%) |       |      |      |       |       |       |
| Lane Group Flow (vph)   | 531   | 0    | 0    | 520   | 3     | 69    |
| Sign Control            | Free  |      |      | Free  | Stop  |       |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 49.5% ICU Level of Service A

Analysis Period (min) 15



Intersection

Int Delay, s/veh 1

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↑↑   |      |      | ↑    | ↑    | ↑    |
| Traffic Vol, veh/h       | 440  | 11   | 36   | 411  | 3    | 61   |
| Future Vol, veh/h        | 440  | 11   | 36   | 411  | 3    | 61   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | 0    | 50   |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 85   | 85   | 86   | 86   | 88   | 88   |
| Heavy Vehicles, %        | 3    | 3    | 3    | 3    | 3    | 3    |
| Mvmt Flow                | 518  | 13   | 42   | 478  | 3    | 69   |

| Major/Minor          | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0      | 0      | 531    |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Critical Hdwy        | -      | -      | 4.145  |
| Critical Hdwy Stg 1  | -      | -      | -      |
| Critical Hdwy Stg 2  | -      | -      | -      |
| Follow-up Hdwy       | -      | -      | 2.2285 |
| Pot Cap-1 Maneuver   | -      | -      | 1028   |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | -      | -      | 1028   |
| Mov Cap-2 Maneuver   | -      | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |

| Approach             | EB | WB  | NB |
|----------------------|----|-----|----|
| HCM Control Delay, s | 0  | 0.7 | 11 |
| HCM LOS              |    |     | B  |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | 211   | 730   | -   | -   | 1028  | -   |
| HCM Lane V/C Ratio    | 0.016 | 0.095 | -   | -   | 0.041 | -   |
| HCM Control Delay (s) | 22.3  | 10.4  | -   | -   | 8.7   | 0   |
| HCM Lane LOS          | C     | B     | -   | -   | A     | A   |
| HCM 95th %tile Q(veh) | 0     | 0.3   | -   | -   | 0.1   | -   |

202: Route 732 (Black Rock Turnpike) & Judd Street  
Lanes, Volumes, Timings

2040 Improved Concept B  
Timing Plan: Weekday MIDDAY

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations     |  |                                                                                   |  |  |  |                                                                                   |
| Traffic Volume (vph)    | 21                                                                                | 65                                                                                | 53                                                                                | 406                                                                               | 484                                                                               | 35                                                                                |
| Future Volume (vph)     | 21                                                                                | 65                                                                                | 53                                                                                | 406                                                                               | 484                                                                               | 35                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Storage Length (ft)     | 0                                                                                 | 0                                                                                 | 25                                                                                |                                                                                   |                                                                                   | 0                                                                                 |
| Storage Lanes           | 1                                                                                 | 0                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.898                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.991                                                                             |                                                                                   |
| Flt Protected           | 0.988                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1820                                                                              | 0                                                                                 | 1719                                                                              | 1810                                                                              | 1793                                                                              | 0                                                                                 |
| Flt Permitted           | 0.988                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1820                                                                              | 0                                                                                 | 1719                                                                              | 1810                                                                              | 1793                                                                              | 0                                                                                 |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 586                                                                               |                                                                                   |                                                                                   | 395                                                                               | 218                                                                               |                                                                                   |
| Travel Time (s)         | 16.0                                                                              |                                                                                   |                                                                                   | 9.0                                                                               | 5.0                                                                               |                                                                                   |
| Peak Hour Factor        | 0.90                                                                              | 0.90                                                                              | 0.94                                                                              | 0.94                                                                              | 0.87                                                                              | 0.87                                                                              |
| Heavy Vehicles (%)      | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                | 5%                                                                                |
| Adj. Flow (vph)         | 23                                                                                | 72                                                                                | 56                                                                                | 432                                                                               | 556                                                                               | 40                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 95                                                                                | 0                                                                                 | 56                                                                                | 432                                                                               | 596                                                                               | 0                                                                                 |
| Sign Control            | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 46.1% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1.8

| Movement                 | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |
|--------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations      |  |      |  |  |  |      |
| Traffic Vol, veh/h       | 21                                                                                | 65   | 53                                                                                | 406                                                                               | 484                                                                               | 35   |
| Future Vol, veh/h        | 21                                                                                | 65   | 53                                                                                | 406                                                                               | 484                                                                               | 35   |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    |
| Sign Control             | Stop                                                                              | Stop | Free                                                                              | Free                                                                              | Free                                                                              | Free |
| RT Channelized           | -                                                                                 | None | -                                                                                 | None                                                                              | -                                                                                 | None |
| Storage Length           | 0                                                                                 | -    | 25                                                                                | -                                                                                 | -                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 90                                                                                | 90   | 94                                                                                | 94                                                                                | 87                                                                                | 87   |
| Heavy Vehicles, %        | 5                                                                                 | 5    | 5                                                                                 | 5                                                                                 | 5                                                                                 | 5    |
| Mvmt Flow                | 23                                                                                | 72   | 56                                                                                | 432                                                                               | 556                                                                               | 40   |

| Major/Minor          | Minor2 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 1120   | 576    | 596    |
| Stage 1              | 576    | -      | -      |
| Stage 2              | 544    | -      | -      |
| Critical Hdwy        | 6.45   | 6.25   | 4.15   |
| Critical Hdwy Stg 1  | 5.45   | -      | -      |
| Critical Hdwy Stg 2  | 5.45   | -      | -      |
| Follow-up Hdwy       | 3.545  | 3.345  | 2.245  |
| Pot Cap-1 Maneuver   | 225    | 511    | 966    |
| Stage 1              | 556    | -      | -      |
| Stage 2              | 576    | -      | -      |
| Platoon blocked, %   |        |        |        |
| Mov Cap-1 Maneuver   | 212    | 511    | 966    |
| Mov Cap-2 Maneuver   | 212    | -      | -      |
| Stage 1              | 524    | -      | -      |
| Stage 2              | 576    | -      | -      |

| Approach             | EB   | NB | SB |
|----------------------|------|----|----|
| HCM Control Delay, s | 17.6 | 1  | 0  |
| HCM LOS              | C    |    |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 966   | -   | 380   | -   | -   |
| HCM Lane V/C Ratio    | 0.058 | -   | 0.251 | -   | -   |
| HCM Control Delay (s) | 9     | -   | 17.6  | -   | -   |
| HCM Lane LOS          | A     | -   | C     | -   | -   |
| HCM 95th %tile Q(veh) | 0.2   | -   | 1     | -   | -   |

203: Moritz Place & Route 58 (Black Rock Turnpike)  
Lanes, Volumes, Timings

2040 Improved Concept B  
Timing Plan: Weekday MIDDAY

|                         | →     | ↘    | ↙    | ←    | ↖    | ↗     |
|-------------------------|-------|------|------|------|------|-------|
| Lane Group              | EBT   | EBR  | WBL  | WBT  | NBL  | NBR   |
| Lane Configurations     | ↰     |      |      | ↱    |      | ↱     |
| Traffic Volume (vph)    | 824   | 6    | 0    | 756  | 0    | 9     |
| Future Volume (vph)     | 824   | 6    | 0    | 756  | 0    | 9     |
| Ideal Flow (vphpl)      | 1900  | 1900 | 1900 | 1900 | 1900 | 1900  |
| Lane Util. Factor       | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  |
| Frt                     | 0.999 |      |      |      |      | 0.865 |
| Flt Protected           |       |      |      |      |      |       |
| Satd. Flow (prot)       | 1825  | 0    | 0    | 1827 | 0    | 1580  |
| Flt Permitted           |       |      |      |      |      |       |
| Satd. Flow (perm)       | 1825  | 0    | 0    | 1827 | 0    | 1580  |
| Link Speed (mph)        | 30    |      |      | 30   | 30   |       |
| Link Distance (ft)      | 187   |      |      | 131  | 186  |       |
| Travel Time (s)         | 4.3   |      |      | 3.0  | 4.2  |       |
| Peak Hour Factor        | 0.90  | 0.90 | 0.96 | 0.96 | 0.80 | 0.80  |
| Heavy Vehicles (%)      | 4%    | 4%   | 4%   | 4%   | 4%   | 4%    |
| Adj. Flow (vph)         | 916   | 7    | 0    | 788  | 0    | 11    |
| Shared Lane Traffic (%) |       |      |      |      |      |       |
| Lane Group Flow (vph)   | 923   | 0    | 0    | 788  | 0    | 11    |
| Sign Control            | Free  |      |      | Free | Stop |       |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 53.7%

ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.1

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↰    |      |      | ↑    |      | ↱    |
| Traffic Vol, veh/h       | 824  | 6    | 0    | 756  | 0    | 9    |
| Future Vol, veh/h        | 824  | 6    | 0    | 756  | 0    | 9    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | 0    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 90   | 90   | 96   | 96   | 80   | 80   |
| Heavy Vehicles, %        | 4    | 4    | 4    | 4    | 4    | 4    |
| Mvmt Flow                | 916  | 7    | 0    | 788  | 0    | 11   |

| Major/Minor          | Major1 | Major2 | Minor1      |
|----------------------|--------|--------|-------------|
| Conflicting Flow All | 0      | 0      | - - - 920   |
| Stage 1              | -      | -      | - - -       |
| Stage 2              | -      | -      | - - -       |
| Critical Hdwy        | -      | -      | - - - 6.24  |
| Critical Hdwy Stg 1  | -      | -      | - - -       |
| Critical Hdwy Stg 2  | -      | -      | - - -       |
| Follow-up Hdwy       | -      | -      | - - - 3.336 |
| Pot Cap-1 Maneuver   | -      | -      | 0 - 0 326   |
| Stage 1              | -      | -      | 0 - 0 -     |
| Stage 2              | -      | -      | 0 - 0 -     |
| Platoon blocked, %   | -      | -      | -           |
| Mov Cap-1 Maneuver   | -      | -      | - - - 326   |
| Mov Cap-2 Maneuver   | -      | -      | - - -       |
| Stage 1              | -      | -      | - - -       |
| Stage 2              | -      | -      | - - -       |

| Approach             | EB | WB | NB   |
|----------------------|----|----|------|
| HCM Control Delay, s | 0  | 0  | 16.4 |
| HCM LOS              |    |    | C    |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h)      | 326   | -   | -   | -   |
| HCM Lane V/C Ratio    | 0.035 | -   | -   | -   |
| HCM Control Delay (s) | 16.4  | -   | -   | -   |
| HCM Lane LOS          | C     | -   | -   | -   |
| HCM 95th %tile Q(veh) | 0.1   | -   | -   | -   |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Talbot Drive Concept B Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 10                                                                                | 0                                                                                 | 1                                                                                 | 54                                                                                | 4                                                                                 | 57                                                                                | 4                                                                                  | 802                                                                                 | 112                                                                                 | 128                                                                                 | 975                                                                                 | 5                                                                                   |
| Future Volume (vph)     | 10                                                                                | 0                                                                                 | 1                                                                                 | 54                                                                                | 4                                                                                 | 57                                                                                | 4                                                                                  | 802                                                                                 | 112                                                                                 | 128                                                                                 | 975                                                                                 | 5                                                                                   |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                 | 13                                                                                  | 12                                                                                  | 12                                                                                  | 13                                                                                  | 12                                                                                  |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.990                                                                             |                                                                                   |                                                                                   | 0.932                                                                             |                                                                                   |                                                                                    | 0.983                                                                               |                                                                                     |                                                                                     | 0.999                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.956                                                                             |                                                                                   |                                                                                   | 0.977                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.994                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 1998                                                                              | 0                                                                                 | 0                                                                                 | 1922                                                                              | 0                                                                                 | 0                                                                                  | 1892                                                                                | 0                                                                                   | 0                                                                                   | 1911                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.650                                                                             |                                                                                   |                                                                                   | 0.844                                                                             |                                                                                   |                                                                                    | 0.996                                                                               |                                                                                     |                                                                                     | 0.776                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 1359                                                                              | 0                                                                                 | 0                                                                                 | 1661                                                                              | 0                                                                                 | 0                                                                                  | 1885                                                                                | 0                                                                                   | 0                                                                                   | 1492                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 26                                                                                |                                                                                   |                                                                                   | 37                                                                                |                                                                                   |                                                                                    | 22                                                                                  |                                                                                     |                                                                                     | 1                                                                                   |                                                                                     |
| Link Speed (mph)        |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 35                                                                                  |                                                                                     |                                                                                     | 35                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 378                                                                               |                                                                                   |                                                                                   | 442                                                                               |                                                                                   |                                                                                    | 1898                                                                                |                                                                                     |                                                                                     | 522                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 10.3                                                                              |                                                                                   |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                    | 37.0                                                                                |                                                                                     |                                                                                     | 10.2                                                                                |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                |
| Adj. Flow (vph)         | 13                                                                                | 0                                                                                 | 1                                                                                 | 59                                                                                | 4                                                                                 | 63                                                                                | 4                                                                                  | 872                                                                                 | 122                                                                                 | 147                                                                                 | 1121                                                                                | 6                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 14                                                                                | 0                                                                                 | 0                                                                                 | 126                                                                               | 0                                                                                 | 0                                                                                  | 998                                                                                 | 0                                                                                   | 0                                                                                   | 1274                                                                                | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                    | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Permitted Phases        | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   | 2                                                                                  |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 4                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |                                                                                   | 2                                                                                  | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 15.0                                                                               | 15.0                                                                                |                                                                                     | 15.0                                                                                | 15.0                                                                                |                                                                                     |
| Minimum Split (s)       | 11.7                                                                              | 11.7                                                                              |                                                                                   | 11.7                                                                              | 11.7                                                                              |                                                                                   | 20.6                                                                               | 20.6                                                                                |                                                                                     | 20.6                                                                                | 20.6                                                                                |                                                                                     |
| Total Split (s)         | 17.0                                                                              | 17.0                                                                              |                                                                                   | 17.0                                                                              | 17.0                                                                              |                                                                                   | 93.0                                                                               | 93.0                                                                                |                                                                                     | 93.0                                                                                | 93.0                                                                                |                                                                                     |
| Total Split (%)         | 15.5%                                                                             | 15.5%                                                                             |                                                                                   | 15.5%                                                                             | 15.5%                                                                             |                                                                                   | 84.5%                                                                              | 84.5%                                                                               |                                                                                     | 84.5%                                                                               | 84.5%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.3                                                                               | 3.3                                                                               |                                                                                   | 3.3                                                                               | 3.3                                                                               |                                                                                   | 4.0                                                                                | 4.0                                                                                 |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.4                                                                               | 1.4                                                                               |                                                                                   | 1.4                                                                               | 1.4                                                                               |                                                                                   | 1.6                                                                                | 1.6                                                                                 |                                                                                     | 1.6                                                                                 | 1.6                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                    | 5.6                                                                                 |                                                                                     |                                                                                     | 5.6                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              |                                                                                   | C-Min                                                                              | C-Min                                                                               |                                                                                     | C-Min                                                                               | C-Min                                                                               |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 10.1                                                                              |                                                                                   |                                                                                   | 10.1                                                                              |                                                                                   |                                                                                    | 89.6                                                                                |                                                                                     |                                                                                     | 89.6                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.09                                                                              |                                                                                   |                                                                                   | 0.09                                                                              |                                                                                   |                                                                                    | 0.81                                                                                |                                                                                     |                                                                                     | 0.81                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.09                                                                              |                                                                                   |                                                                                   | 0.68                                                                              |                                                                                   |                                                                                    | 0.65                                                                                |                                                                                     |                                                                                     | 1.05                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 9.2                                                                               |                                                                                   |                                                                                   | 52.0                                                                              |                                                                                   |                                                                                    | 6.7                                                                                 |                                                                                     |                                                                                     | 52.9                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 9.2                                                                               |                                                                                   |                                                                                   | 52.0                                                                              |                                                                                   |                                                                                    | 6.7                                                                                 |                                                                                     |                                                                                     | 52.9                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 9.2                                                                               |                                                                                   |                                                                                   | 52.0                                                                              |                                                                                   |                                                                                    | 6.7                                                                                 |                                                                                     |                                                                                     | 52.9                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 61                                                                                |                                                                                   |                                                                                    | 374                                                                                 |                                                                                     |                                                                                     | ~988                                                                                |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   | 123                                                                               |                                                                                   |                                                                                    | 356                                                                                 |                                                                                     |                                                                                     | #1196                                                                               |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 298                                                                               |                                                                                   |                                                                                   | 362                                                                               |                                                                                   |                                                                                    | 1818                                                                                |                                                                                     |                                                                                     | 442                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

2040 Diverged Concept B

Timing Plan: Weekday PM Peak

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Base Capacity (vph)    |                                                                                   | 175                                                                               |                                                                                   |                                                                                   | 218                                                                               |                                                                                   |                                                                                    | 1539                                                                                |                                                                                     |                                                                                     | 1215                                                                                |                                                                                     |
| Starvation Cap Reductn |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   | 0.08                                                                              |                                                                                   |                                                                                   | 0.58                                                                              |                                                                                   |                                                                                    | 0.65                                                                                |                                                                                     |                                                                                     | 1.05                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 67 (61%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 33.5

Intersection LOS: C

Intersection Capacity Utilization 127.4%

ICU Level of Service H

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

|                                                                                            |                                                                                          |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø2 (R) |  Ø4 |
| 93 s                                                                                       | 17 s                                                                                     |
|  Ø6 (R) |  Ø8 |
| 93 s                                                                                       | 17 s                                                                                     |



102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive  
Lanes, Volumes, Timings

2040 Improved Concept B

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |      |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3   |
| Lane Configurations     |  |  |  |  |  |  |      |
| Traffic Volume (vph)    | 178                                                                               | 344                                                                               | 135                                                                               | 808                                                                               | 946                                                                               | 88                                                                                |      |
| Future Volume (vph)     | 178                                                                               | 344                                                                               | 135                                                                               | 808                                                                               | 946                                                                               | 88                                                                                |      |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |      |
| Lane Width (ft)         | 10                                                                                | 10                                                                                | 11                                                                                | 11                                                                                | 12                                                                                | 12                                                                                |      |
| Storage Length (ft)     | 0                                                                                 | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   | 50                                                                                |      |
| Storage Lanes           | 1                                                                                 | 1                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 1                                                                                 |      |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |      |
| Frt                     |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |      |
| Flt Protected           | 0.950                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |      |
| Satd. Flow (prot)       | 1652                                                                              | 1478                                                                              | 1711                                                                              | 3421                                                                              | 1863                                                                              | 1583                                                                              |      |
| Flt Permitted           | 0.950                                                                             |                                                                                   | 0.065                                                                             |                                                                                   |                                                                                   |                                                                                   |      |
| Satd. Flow (perm)       | 1652                                                                              | 1478                                                                              | 117                                                                               | 3421                                                                              | 1863                                                                              | 1583                                                                              |      |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |      |
| Satd. Flow (RTOR)       |                                                                                   | 215                                                                               |                                                                                   |                                                                                   |                                                                                   | 18                                                                                |      |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 35                                                                                |                                                                                   |      |
| Link Distance (ft)      | 445                                                                               |                                                                                   |                                                                                   | 510                                                                               | 341                                                                               |                                                                                   |      |
| Travel Time (s)         | 12.1                                                                              |                                                                                   |                                                                                   | 11.6                                                                              | 6.6                                                                               |                                                                                   |      |
| Peak Hour Factor        | 0.90                                                                              | 0.90                                                                              | 0.88                                                                              | 0.88                                                                              | 0.95                                                                              | 0.95                                                                              |      |
| Adj. Flow (vph)         | 198                                                                               | 382                                                                               | 153                                                                               | 918                                                                               | 996                                                                               | 93                                                                                |      |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Group Flow (vph)   | 198                                                                               | 382                                                                               | 153                                                                               | 918                                                                               | 996                                                                               | 93                                                                                |      |
| Turn Type               | Prot                                                                              | Perm                                                                              | pm+pt                                                                             | NA                                                                                | NA                                                                                | Perm                                                                              |      |
| Protected Phases        | 4                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 | 2                                                                                 |                                                                                   | 3    |
| Permitted Phases        |                                                                                   | 4                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |      |
| Detector Phase          | 4                                                                                 | 4                                                                                 | 1                                                                                 | 6                                                                                 | 2                                                                                 | 2                                                                                 |      |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               | 5.0                                                                               | 15.0                                                                              | 15.0                                                                              | 15.0                                                                              | 7.0  |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              | 9.2                                                                               | 21.9                                                                              | 21.9                                                                              | 21.9                                                                              | 22.0 |
| Total Split (s)         | 17.0                                                                              | 17.0                                                                              | 10.2                                                                              | 71.0                                                                              | 60.8                                                                              | 60.8                                                                              | 22.0 |
| Total Split (%)         | 15.5%                                                                             | 15.5%                                                                             | 9.3%                                                                              | 64.5%                                                                             | 55.3%                                                                             | 55.3%                                                                             | 20%  |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               | 3.2                                                                               | 4.9                                                                               | 4.9                                                                               | 4.9                                                                               | 4.0  |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 0.0  |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |      |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               | 4.2                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               |      |
| Lead/Lag                | Lag                                                                               | Lag                                                                               | Lead                                                                              |                                                                                   | Lag                                                                               | Lag                                                                               | Lead |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               | Yes  |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | C-Min                                                                             | C-Min                                                                             | C-Min                                                                             | None |
| Act Effct Green (s)     | 26.4                                                                              | 26.4                                                                              | 75.4                                                                              | 72.7                                                                              | 57.2                                                                              | 57.2                                                                              |      |
| Actuated g/C Ratio      | 0.24                                                                              | 0.24                                                                              | 0.69                                                                              | 0.66                                                                              | 0.52                                                                              | 0.52                                                                              |      |
| v/c Ratio               | 0.50                                                                              | 0.74                                                                              | 0.63                                                                              | 0.41                                                                              | 1.03                                                                              | 0.11                                                                              |      |
| Control Delay           | 40.7                                                                              | 25.7                                                                              | 37.6                                                                              | 7.0                                                                               | 38.7                                                                              | 6.1                                                                               |      |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |      |
| Total Delay             | 40.7                                                                              | 25.7                                                                              | 37.6                                                                              | 7.0                                                                               | 38.7                                                                              | 6.1                                                                               |      |
| LOS                     | D                                                                                 | C                                                                                 | D                                                                                 | A                                                                                 | D                                                                                 | A                                                                                 |      |
| Approach Delay          | 30.8                                                                              |                                                                                   |                                                                                   | 11.4                                                                              | 35.9                                                                              |                                                                                   |      |
| Approach LOS            | C                                                                                 |                                                                                   |                                                                                   | B                                                                                 | D                                                                                 |                                                                                   |      |
| Queue Length 50th (ft)  | 123                                                                               | 111                                                                               | 63                                                                                | 115                                                                               | -691                                                                              | 17                                                                                |      |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive Lanes, Volumes, Timings

2040 Improved Concept B  
Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |    |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3 |
| Queue Length 95th (ft)  | 187                                                                               | 218                                                                               | 124                                                                               | 122                                                                               | m#742                                                                             | m19                                                                               |    |
| Internal Link Dist (ft) | 365                                                                               |                                                                                   |                                                                                   | 430                                                                               | 261                                                                               |                                                                                   |    |
| Turn Bay Length (ft)    |                                                                                   | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   | 50                                                                                |    |
| Base Capacity (vph)     | 396                                                                               | 518                                                                               | 243                                                                               | 2261                                                                              | 968                                                                               | 832                                                                               |    |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |    |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |    |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |    |
| Reduced v/c Ratio       | 0.50                                                                              | 0.74                                                                              | 0.63                                                                              | 0.41                                                                              | 1.03                                                                              | 0.11                                                                              |    |

## Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow, Master Intersection

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 25.2

Intersection LOS: C

Intersection Capacity Utilization 80.2%

ICU Level of Service D

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

|                                                                                            |                                                                                            |                                                                                          |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø3 |  Ø4 |
| 10.2 s                                                                                     | 60.8 s                                                                                     | 22 s                                                                                     | 17 s                                                                                     |
|  Ø6 (R) |                                                                                            |                                                                                          |                                                                                          |
| 71 s                                                                                       |                                                                                            |                                                                                          |                                                                                          |

# 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Drive 2040 Improved Concept B Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                     |                                                                                     |  |  |
| Traffic Volume (vph)    | 135                                                                               | 3                                                                                 | 73                                                                                | 4                                                                                 | 0                                                                                 | 36                                                                                | 40                                                                                | 778                                                                                 | 1                                                                                   | 5                                                                                   | 1171                                                                                | 166                                                                                 |
| Future Volume (vph)     | 135                                                                               | 3                                                                                 | 73                                                                                | 4                                                                                 | 0                                                                                 | 36                                                                                | 40                                                                                | 778                                                                                 | 1                                                                                   | 5                                                                                   | 1171                                                                                | 166                                                                                 |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 50                                                                                |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                     | 0                                                                                   | 200                                                                                 |                                                                                     | 0                                                                                   |
| Storage Lanes           | 1                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 50                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                     |                                                                                     | 50                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Frt                     |                                                                                   | 0.893                                                                             |                                                                                   |                                                                                   | 0.878                                                                             |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     | 0.981                                                                               |                                                                                     |
| Flt Protected           | 0.950                                                                             | 0.988                                                                             |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   | 0.998                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1905                                                                              | 1561                                                                              | 0                                                                                 | 0                                                                                 | 1844                                                                              | 0                                                                                 | 0                                                                                 | 3532                                                                                | 0                                                                                   | 0                                                                                   | 3472                                                                                | 0                                                                                   |
| Flt Permitted           | 0.950                                                                             | 0.988                                                                             |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   | 0.805                                                                               |                                                                                     |                                                                                     | 0.953                                                                               |                                                                                     |
| Satd. Flow (perm)       | 1905                                                                              | 1561                                                                              | 0                                                                                 | 0                                                                                 | 1844                                                                              | 0                                                                                 | 0                                                                                 | 2849                                                                                | 0                                                                                   | 0                                                                                   | 3309                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 91                                                                                |                                                                                   |                                                                                   | 122                                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     | 26                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 347                                                                               |                                                                                   |                                                                                   | 133                                                                               |                                                                                   |                                                                                   | 293                                                                                 |                                                                                     |                                                                                     | 336                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.5                                                                               |                                                                                   |                                                                                   | 3.6                                                                               |                                                                                   |                                                                                   | 6.7                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.97                                                                              | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                |
| Adj. Flow (vph)         | 169                                                                               | 4                                                                                 | 91                                                                                | 5                                                                                 | 0                                                                                 | 45                                                                                | 41                                                                                | 802                                                                                 | 1                                                                                   | 5                                                                                   | 1207                                                                                | 171                                                                                 |
| Shared Lane Traffic (%) | 19%                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 137                                                                               | 127                                                                               | 0                                                                                 | 0                                                                                 | 50                                                                                | 0                                                                                 | 0                                                                                 | 844                                                                                 | 0                                                                                   | 0                                                                                   | 1383                                                                                | 0                                                                                   |
| Turn Type               | Split                                                                             | NA                                                                                |                                                                                   | Split                                                                             | NA                                                                                |                                                                                   | pm+pt                                                                             | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        | 4                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 2                                                                                 |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 4                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                 | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 15.0                                                                                |                                                                                     | 15.0                                                                                | 15.0                                                                                |                                                                                     |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              |                                                                                   | 9.0                                                                               | 9.0                                                                               |                                                                                   | 10.9                                                                              | 20.4                                                                                |                                                                                     | 20.4                                                                                | 20.4                                                                                |                                                                                     |
| Total Split (s)         | 18.0                                                                              | 18.0                                                                              |                                                                                   | 9.0                                                                               | 9.0                                                                               |                                                                                   | 10.9                                                                              | 83.0                                                                                |                                                                                     | 72.1                                                                                | 72.1                                                                                |                                                                                     |
| Total Split (%)         | 16.4%                                                                             | 16.4%                                                                             |                                                                                   | 8.2%                                                                              | 8.2%                                                                              |                                                                                   | 9.9%                                                                              | 75.5%                                                                               |                                                                                     | 65.5%                                                                               | 65.5%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 4.2                                                                               | 4.2                                                                                 |                                                                                     | 4.2                                                                                 | 4.2                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               |                                                                                   | 1.0                                                                               | 1.0                                                                               |                                                                                   | 1.7                                                                               | 1.2                                                                                 |                                                                                     | 1.2                                                                                 | 1.2                                                                                 |                                                                                     |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                   | 5.4                                                                                 |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Lag                                                                               |                                                                                     |                                                                                     | Lead                                                                                | Lead                                                                                |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 | Yes                                                                                 |                                                                                     |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              |                                                                                   | None                                                                              | C-Min                                                                               |                                                                                     | C-Min                                                                               | C-Min                                                                               |                                                                                     |
| Act Effct Green (s)     | 12.5                                                                              | 12.5                                                                              |                                                                                   |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   | 80.4                                                                                |                                                                                     |                                                                                     | 80.4                                                                                |                                                                                     |
| Actuated g/C Ratio      | 0.11                                                                              | 0.11                                                                              |                                                                                   |                                                                                   | 0.05                                                                              |                                                                                   |                                                                                   | 0.73                                                                                |                                                                                     |                                                                                     | 0.73                                                                                |                                                                                     |
| v/c Ratio               | 0.63                                                                              | 0.49                                                                              |                                                                                   |                                                                                   | 0.24                                                                              |                                                                                   |                                                                                   | 0.41                                                                                |                                                                                     |                                                                                     | 0.57                                                                                |                                                                                     |
| Control Delay           | 59.4                                                                              | 22.1                                                                              |                                                                                   |                                                                                   | 2.7                                                                               |                                                                                   |                                                                                   | 5.2                                                                                 |                                                                                     |                                                                                     | 6.3                                                                                 |                                                                                     |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.1                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             | 59.4                                                                              | 22.1                                                                              |                                                                                   |                                                                                   | 2.7                                                                               |                                                                                   |                                                                                   | 5.3                                                                                 |                                                                                     |                                                                                     | 6.3                                                                                 |                                                                                     |
| LOS                     | E                                                                                 | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 41.4                                                                              |                                                                                   |                                                                                   | 2.7                                                                               |                                                                                   |                                                                                   | 5.3                                                                                 |                                                                                     |                                                                                     | 6.3                                                                                 |                                                                                     |
| Approach LOS            |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Queue Length 50th (ft)  | 98                                                                                | 25                                                                                |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 107                                                                                 |                                                                                     |                                                                                     | 186                                                                                 |                                                                                     |

# 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Driveway 2040 Improved Concept B Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

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|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  | 140                                                                               | 64                                                                                |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 76                                                                                  |                                                                                     | m112                                                                                |                                                                                     |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 267                                                                               |                                                                                   |                                                                                   | 53                                                                                |                                                                                   |                                                                                    | 213                                                                                 |                                                                                     |                                                                                     | 256                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 253                                                                               | 286                                                                               |                                                                                   |                                                                                   | 209                                                                               |                                                                                   |                                                                                    | 2104                                                                                |                                                                                     |                                                                                     | 2425                                                                                |                                                                                     |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 407                                                                                 |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 1                                                                                   |                                                                                     |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       | 0.54                                                                              | 0.44                                                                              |                                                                                   |                                                                                   | 0.24                                                                              |                                                                                   |                                                                                    | 0.50                                                                                |                                                                                     |                                                                                     | 0.57                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 37 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 9.6

Intersection LOS: A

Intersection Capacity Utilization 71.8%

ICU Level of Service C

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Driveway

|                                                                                            |                                                                                          |                                                                                          |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø2 (R) |  Ø4 |  Ø8 |
| 83 s                                                                                       | 18 s                                                                                     | 9 s                                                                                      |
|  Ø6 (R) |  Ø5 |                                                                                          |
| 72.1 s                                                                                     | 10.9 s                                                                                   |                                                                                          |

# 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Blvd Intersect Concept B Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |       |       |       |       |       |       |       |      |       |       |      |
|-------------------------|------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|------|
| Lane Group              | EBL                                                                                | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
| Lane Configurations     |                                                                                    |       |       |       |       |       |       |       |      |       |       |      |
| Traffic Volume (vph)    | 29                                                                                 | 18    | 46    | 69    | 15    | 110   | 47    | 706   | 90   | 292   | 918   | 37   |
| Future Volume (vph)     | 29                                                                                 | 18    | 46    | 69    | 15    | 110   | 47    | 706   | 90   | 292   | 918   | 37   |
| Ideal Flow (vphpl)      | 1900                                                                               | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12                                                                                 | 12    | 12    | 12    | 12    | 11    | 12    | 11    | 12   | 12    | 11    | 12   |
| Storage Length (ft)     | 0                                                                                  |       | 0     | 0     |       | 75    | 200   |       | 0    | 0     |       | 0    |
| Storage Lanes           | 0                                                                                  |       | 1     | 0     |       | 1     | 1     |       | 0    | 1     |       | 0    |
| Taper Length (ft)       | 25                                                                                 |       |       | 25    |       |       | 25    |       |      | 25    |       |      |
| Lane Util. Factor       | 1.00                                                                               | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 0.95  | 0.95 | 1.00  | 1.00  | 1.00 |
| Frt                     |                                                                                    |       | 0.850 |       |       | 0.850 |       | 0.983 |      |       | 0.994 |      |
| Flt Protected           |                                                                                    | 0.970 |       |       | 0.960 |       | 0.950 |       |      | 0.950 |       |      |
| Satd. Flow (prot)       | 0                                                                                  | 1807  | 1583  | 0     | 1788  | 1531  | 1770  | 3363  | 0    | 1770  | 1790  | 0    |
| Flt Permitted           |                                                                                    | 0.788 |       |       | 0.723 |       | 0.278 |       |      | 0.271 |       |      |
| Satd. Flow (perm)       | 0                                                                                  | 1468  | 1583  | 0     | 1347  | 1531  | 518   | 3363  | 0    | 505   | 1790  | 0    |
| Right Turn on Red       |                                                                                    |       | Yes   |       |       | No    |       |       | Yes  |       |       | Yes  |
| Satd. Flow (RTOR)       |                                                                                    |       | 87    |       |       |       |       | 19    |      |       | 6     |      |
| Link Speed (mph)        |                                                                                    | 30    |       |       | 25    |       |       | 30    |      |       | 30    |      |
| Link Distance (ft)      |                                                                                    | 97    |       |       | 499   |       |       | 535   |      |       | 293   |      |
| Travel Time (s)         |                                                                                    | 2.2   |       |       | 13.6  |       |       | 12.2  |      |       | 6.7   |      |
| Peak Hour Factor        | 0.92                                                                               | 0.92  | 0.92  | 0.80  | 0.92  | 0.80  | 0.92  | 0.93  | 0.93 | 0.98  | 0.98  | 0.92 |
| Adj. Flow (vph)         | 32                                                                                 | 20    | 50    | 86    | 16    | 138   | 51    | 759   | 97   | 298   | 937   | 40   |
| Shared Lane Traffic (%) |                                                                                    |       |       |       |       |       |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 0                                                                                  | 52    | 50    | 0     | 102   | 138   | 51    | 856   | 0    | 298   | 977   | 0    |
| Turn Type               | Perm                                                                               | NA    | Perm  | Perm  | NA    | Perm  | Perm  | NA    |      | pm+pt | NA    |      |
| Protected Phases        |                                                                                    | 4     |       |       | 8     |       |       | 2     |      | 1     | 6     |      |
| Permitted Phases        | 4                                                                                  |       | 4     | 8     |       | 8     | 2     |       |      | 6     |       |      |
| Detector Phase          | 4                                                                                  | 4     | 4     | 8     | 8     | 8     | 2     | 2     |      | 1     | 6     |      |
| Switch Phase            |                                                                                    |       |       |       |       |       |       |       |      |       |       |      |
| Minimum Initial (s)     | 9.0                                                                                | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 15.0  | 15.0  |      | 3.0   | 15.0  |      |
| Minimum Split (s)       | 13.0                                                                               | 13.0  | 13.0  | 13.0  | 13.0  | 13.0  | 20.3  | 20.3  |      | 9.5   | 20.3  |      |
| Total Split (s)         | 22.0                                                                               | 22.0  | 22.0  | 22.0  | 22.0  | 22.0  | 63.0  | 63.0  |      | 25.0  | 88.0  |      |
| Total Split (%)         | 20.0%                                                                              | 20.0% | 20.0% | 20.0% | 20.0% | 20.0% | 57.3% | 57.3% |      | 22.7% | 80.0% |      |
| Yellow Time (s)         | 3.0                                                                                | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 4.3   | 4.3   |      | 4.3   | 4.3   |      |
| All-Red Time (s)        | 1.0                                                                                | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |      | 2.2   | 1.0   |      |
| Lost Time Adjust (s)    |                                                                                    | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   | 0.0   |      | 0.0   | 0.0   |      |
| Total Lost Time (s)     |                                                                                    | 4.0   | 4.0   |       | 4.0   | 4.0   | 5.3   | 5.3   |      | 6.5   | 5.3   |      |
| Lead/Lag                |                                                                                    |       |       |       |       |       | Lag   | Lag   |      | Lead  |       |      |
| Lead-Lag Optimize?      |                                                                                    |       |       |       |       |       | Yes   | Yes   |      | Yes   |       |      |
| Recall Mode             | None                                                                               | None  | None  | None  | None  | None  | C-Max | C-Max |      | None  | C-Max |      |
| Act Effct Green (s)     |                                                                                    | 13.9  | 13.9  |       | 13.9  | 13.9  | 71.5  | 71.5  |      | 85.6  | 86.8  |      |
| Actuated g/C Ratio      |                                                                                    | 0.13  | 0.13  |       | 0.13  | 0.13  | 0.65  | 0.65  |      | 0.78  | 0.79  |      |
| v/c Ratio               |                                                                                    | 0.28  | 0.18  |       | 0.60  | 0.72  | 0.15  | 0.39  |      | 0.60  | 0.69  |      |
| Control Delay           |                                                                                    | 46.0  | 3.8   |       | 59.5  | 65.7  | 10.7  | 10.2  |      | 10.6  | 5.5   |      |
| Queue Delay             |                                                                                    | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   | 0.0   |      | 0.1   | 0.3   |      |
| Total Delay             |                                                                                    | 46.0  | 3.8   |       | 59.5  | 65.7  | 10.7  | 10.2  |      | 10.7  | 5.7   |      |
| LOS                     |                                                                                    | D     | A     |       | E     | E     | B     | B     |      | B     | A     |      |
| Approach Delay          |                                                                                    | 25.3  |       |       | 63.1  |       |       | 10.2  |      |       | 6.9   |      |
| Approach LOS            |                                                                                    | C     |       |       | E     |       |       | B     |      |       | A     |      |
| Queue Length 50th (ft)  |                                                                                    | 34    | 0     |       | 69    | 95    | 13    | 133   |      | 7     | 40    |      |

# 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road Concept B Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 70                                                                                | 11                                                                                |                                                                                   | 122                                                                               | 137                                                                               | 37                                                                                 | 210                                                                                 |                                                                                     | 108                                                                                 | 153                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 17                                                                                |                                                                                   |                                                                                   | 419                                                                               |                                                                                   |                                                                                    | 455                                                                                 |                                                                                     |                                                                                     | 213                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 75                                                                                | 200                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 240                                                                               | 331                                                                               |                                                                                   | 220                                                                               | 250                                                                               | 336                                                                                | 2193                                                                                |                                                                                     | 605                                                                                 | 1413                                                                                |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |                                                                                     | 19                                                                                  | 83                                                                                  |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.22                                                                              | 0.15                                                                              |                                                                                   | 0.46                                                                              | 0.55                                                                              | 0.15                                                                               | 0.39                                                                                |                                                                                     | 0.51                                                                                | 0.73                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 17 (15%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 14.2

Intersection LOS: B

Intersection Capacity Utilization 86.5%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road

|                                                                                            |                                                                                           |                                                                                          |
|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1      |  Ø2 (R) |  Ø4  |
| 25 s                                                                                       | 63 s                                                                                      | 22 s                                                                                     |
|  Ø6 (R) |                                                                                           |  Ø8 |
| 88 s                                                                                       |                                                                                           | 22 s                                                                                     |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Improved Concept B Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (vph)    | 90                                                                                | 791                                                                               | 157                                                                               | 148                                                                               | 625                                                                               | 131                                                                               | 232                                                                                | 279                                                                                 | 177                                                                                 | 189                                                                                 | 270                                                                                 | 44                                                                                  |
| Future Volume (vph)     | 90                                                                                | 791                                                                               | 157                                                                               | 148                                                                               | 625                                                                               | 131                                                                               | 232                                                                                | 279                                                                                 | 177                                                                                 | 189                                                                                 | 270                                                                                 | 44                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 11                                                                                | 11                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                 | 11                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 200                                                                               |                                                                                   | 325                                                                               | 200                                                                               |                                                                                   | 0                                                                                 | 400                                                                                |                                                                                     | 75                                                                                  | 170                                                                                 |                                                                                     | 75                                                                                  |
| Storage Lanes           | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                  |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)       | 85                                                                                |                                                                                   |                                                                                   | 50                                                                                |                                                                                   |                                                                                   | 100                                                                                |                                                                                     |                                                                                     | 100                                                                                 |                                                                                     |                                                                                     |
| Lane Util. Factor       | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.975                                                                             |                                                                                   |                                                                                   | 0.974                                                                             |                                                                                   |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                              |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1711                                                                              | 3336                                                                              | 0                                                                                 | 1711                                                                              | 3447                                                                              | 0                                                                                 | 1711                                                                               | 1801                                                                                | 1583                                                                                | 1770                                                                                | 1863                                                                                | 1583                                                                                |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.316                                                                              |                                                                                     |                                                                                     | 0.311                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 1711                                                                              | 3336                                                                              | 0                                                                                 | 1711                                                                              | 3447                                                                              | 0                                                                                 | 569                                                                                | 1801                                                                                | 1583                                                                                | 579                                                                                 | 1863                                                                                | 1583                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | No                                                                                  |
| Satd. Flow (RTOR)       |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 17                                                                                |                                                                                   |                                                                                    |                                                                                     | 125                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 628                                                                               |                                                                                   |                                                                                   | 408                                                                               |                                                                                   |                                                                                    | 637                                                                                 |                                                                                     |                                                                                     | 355                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 14.3                                                                              |                                                                                   |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                    | 14.5                                                                                |                                                                                     |                                                                                     | 9.7                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.89                                                                               | 0.89                                                                                | 0.89                                                                                | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                |
| Adj. Flow (vph)         | 96                                                                                | 841                                                                               | 167                                                                               | 153                                                                               | 644                                                                               | 135                                                                               | 261                                                                                | 313                                                                                 | 199                                                                                 | 217                                                                                 | 310                                                                                 | 51                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 96                                                                                | 1008                                                                              | 0                                                                                 | 153                                                                               | 779                                                                               | 0                                                                                 | 261                                                                                | 313                                                                                 | 199                                                                                 | 217                                                                                 | 310                                                                                 | 51                                                                                  |
| Turn Type               | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | NA                                                                                |                                                                                   | pm+pt                                                                              | NA                                                                                  | Perm                                                                                | pm+pt                                                                               | NA                                                                                  | Perm                                                                                |
| Protected Phases        | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 7                                                                                  | 4                                                                                   |                                                                                     | 3                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 4                                                                                  |                                                                                     | 4                                                                                   | 8                                                                                   |                                                                                     | 8                                                                                   |
| Detector Phase          | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 7                                                                                  | 4                                                                                   | 4                                                                                   | 3                                                                                   | 8                                                                                   | 8                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 15.0                                                                              |                                                                                   | 5.0                                                                               | 15.0                                                                              |                                                                                   | 5.0                                                                                | 10.0                                                                                | 10.0                                                                                | 5.0                                                                                 | 10.0                                                                                | 10.0                                                                                |
| Minimum Split (s)       | 9.7                                                                               | 21.6                                                                              |                                                                                   | 9.7                                                                               | 21.6                                                                              |                                                                                   | 9.3                                                                                | 16.8                                                                                | 16.8                                                                                | 9.3                                                                                 | 16.8                                                                                | 16.8                                                                                |
| Total Split (s)         | 16.6                                                                              | 46.0                                                                              |                                                                                   | 18.0                                                                              | 47.4                                                                              |                                                                                   | 16.0                                                                               | 32.0                                                                                | 32.0                                                                                | 16.0                                                                                | 32.0                                                                                | 32.0                                                                                |
| Total Split (%)         | 11.4%                                                                             | 31.7%                                                                             |                                                                                   | 12.4%                                                                             | 32.7%                                                                             |                                                                                   | 11.0%                                                                              | 22.1%                                                                               | 22.1%                                                                               | 11.0%                                                                               | 22.1%                                                                               | 22.1%                                                                               |
| Yellow Time (s)         | 3.0                                                                               | 4.1                                                                               |                                                                                   | 3.0                                                                               | 4.1                                                                               |                                                                                   | 3.3                                                                                | 4.4                                                                                 | 4.4                                                                                 | 3.3                                                                                 | 4.4                                                                                 | 4.4                                                                                 |
| All-Red Time (s)        | 1.7                                                                               | 2.5                                                                               |                                                                                   | 1.7                                                                               | 2.5                                                                               |                                                                                   | 1.0                                                                                | 2.4                                                                                 | 2.4                                                                                 | 1.0                                                                                 | 2.4                                                                                 | 2.4                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 4.7                                                                               | 6.6                                                                               |                                                                                   | 4.7                                                                               | 6.6                                                                               |                                                                                   | 4.3                                                                                | 6.8                                                                                 | 6.8                                                                                 | 4.3                                                                                 | 6.8                                                                                 | 6.8                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                               | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode             | None                                                                              | Min                                                                               |                                                                                   | None                                                                              | Min                                                                               |                                                                                   | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Act Effct Green (s)     | 10.5                                                                              | 39.4                                                                              |                                                                                   | 13.3                                                                              | 42.2                                                                              |                                                                                   | 39.4                                                                               | 25.2                                                                                | 25.2                                                                                | 39.4                                                                                | 25.2                                                                                | 25.2                                                                                |
| Actuated g/C Ratio      | 0.09                                                                              | 0.35                                                                              |                                                                                   | 0.12                                                                              | 0.38                                                                              |                                                                                   | 0.35                                                                               | 0.22                                                                                | 0.22                                                                                | 0.35                                                                                | 0.22                                                                                | 0.22                                                                                |
| v/c Ratio               | 0.60                                                                              | 0.85                                                                              |                                                                                   | 0.75                                                                              | 0.60                                                                              |                                                                                   | 0.82                                                                               | 0.77                                                                                | 0.44                                                                                | 0.66                                                                                | 0.74                                                                                | 0.14                                                                                |
| Control Delay           | 64.2                                                                              | 41.4                                                                              |                                                                                   | 71.2                                                                              | 30.0                                                                              |                                                                                   | 48.1                                                                               | 54.9                                                                                | 17.9                                                                                | 35.2                                                                                | 52.3                                                                                | 36.2                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 64.2                                                                              | 41.4                                                                              |                                                                                   | 71.2                                                                              | 30.0                                                                              |                                                                                   | 48.1                                                                               | 54.9                                                                                | 17.9                                                                                | 35.2                                                                                | 52.3                                                                                | 36.2                                                                                |
| LOS                     | E                                                                                 | D                                                                                 |                                                                                   | E                                                                                 | C                                                                                 |                                                                                   | D                                                                                  | D                                                                                   | B                                                                                   | D                                                                                   | D                                                                                   | D                                                                                   |
| Approach Delay          |                                                                                   | 43.4                                                                              |                                                                                   |                                                                                   | 36.8                                                                              |                                                                                   |                                                                                    | 43.1                                                                                |                                                                                     |                                                                                     | 44.4                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Queue Length 50th (ft)  | 67                                                                                | 345                                                                               |                                                                                   | 108                                                                               | 233                                                                               |                                                                                   | 133                                                                                | 213                                                                                 | 44                                                                                  | 107                                                                                 | 209                                                                                 | 30                                                                                  |



# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Improved Concept B Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

| Lane Group              | Ø9   |
|-------------------------|------|
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 33.0 |
| Total Split (s)         | 33.0 |
| Total Split (%)         | 23%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Improved Concept B Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  | 122                                                                               | 434                                                                               |                                                                                   | #209                                                                              | 300                                                                               |                                                                                   | #202                                                                               | #334                                                                                | 111                                                                                 | 161                                                                                 | 297                                                                                 | 62                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 548                                                                               |                                                                                   |                                                                                   | 328                                                                               |                                                                                   |                                                                                    | 557                                                                                 |                                                                                     |                                                                                     | 275                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 200                                                                               |                                                                                   |                                                                                   | 200                                                                               |                                                                                   |                                                                                   | 400                                                                                |                                                                                     | 75                                                                                  | 170                                                                                 |                                                                                     | 75                                                                                  |
| Base Capacity (vph)     | 181                                                                               | 1183                                                                              |                                                                                   | 203                                                                               | 1308                                                                              |                                                                                   | 319                                                                                | 405                                                                                 | 453                                                                                 | 328                                                                                 | 419                                                                                 | 356                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.53                                                                              | 0.85                                                                              |                                                                                   | 0.75                                                                              | 0.60                                                                              |                                                                                   | 0.82                                                                               | 0.77                                                                                | 0.44                                                                                | 0.66                                                                                | 0.74                                                                                | 0.14                                                                                |

## Intersection Summary

Area Type: Other

Cycle Length: 145

Actuated Cycle Length: 112

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 41.7

Intersection LOS: D

Intersection Capacity Utilization 80.8%

ICU Level of Service D

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)

|                                                                                        |                                                                                        |                                                                                        |                                                                                          |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø9 |  Ø3 |  Ø4 |
| 18 s                                                                                   | 46 s                                                                                   | 33 s                                                                                   | 16 s                                                                                     | 32 s                                                                                     |
|  Ø5 |  Ø6 |                                                                                        |  Ø7 |  Ø8 |
| 16.6 s                                                                                 | 47.4 s                                                                                 |                                                                                        | 16 s                                                                                     | 32 s                                                                                     |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø9 |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & 2040-50 Black Rock Turnpike)

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |  |
| Traffic Volume (vph)    | 74                                                                                | 875                                                                               | 22                                                                                | 77                                                                                | 678                                                                               | 62                                                                                | 173                                                                                | 12                                                                                  | 115                                                                                 | 48                                                                                  | 5                                                                                   | 31                                                                                  |
| Future Volume (vph)     | 74                                                                                | 875                                                                               | 22                                                                                | 77                                                                                | 678                                                                               | 62                                                                                | 173                                                                                | 12                                                                                  | 115                                                                                 | 48                                                                                  | 5                                                                                   | 31                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                 | 13                                                                                  | 13                                                                                  | 12                                                                                  | 13                                                                                  | 13                                                                                  |
| Storage Length (ft)     | 0                                                                                 |                                                                                   | 0                                                                                 | 325                                                                               |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 25                                                                                  | 0                                                                                   |                                                                                     | 25                                                                                  |
| Storage Lanes           | 0                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 1                                                                                   | 0                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)       | 50                                                                                |                                                                                   |                                                                                   | 50                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                   | 0.989                                                                             |                                                                                   |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected           |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                    | 0.955                                                                               |                                                                                     |                                                                                     | 0.957                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3397                                                                              | 0                                                                                 | 0                                                                                 | 3367                                                                              | 0                                                                                 | 0                                                                                  | 1838                                                                                | 1636                                                                                | 0                                                                                   | 1842                                                                                | 1636                                                                                |
| Flt Permitted           |                                                                                   | 0.751                                                                             |                                                                                   |                                                                                   | 0.726                                                                             |                                                                                   |                                                                                    | 0.695                                                                               |                                                                                     |                                                                                     | 0.639                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 2562                                                                              | 0                                                                                 | 0                                                                                 | 2456                                                                              | 0                                                                                 | 0                                                                                  | 1338                                                                                | 1636                                                                                | 0                                                                                   | 1230                                                                                | 1636                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 11                                                                                |                                                                                   |                                                                                    |                                                                                     | 131                                                                                 |                                                                                     |                                                                                     | 131                                                                                 |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 401                                                                               |                                                                                   |                                                                                   | 502                                                                               |                                                                                   |                                                                                    | 123                                                                                 |                                                                                     |                                                                                     | 137                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.1                                                                               |                                                                                   |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                    | 3.4                                                                                 |                                                                                     |                                                                                     | 3.7                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.84                                                                               | 0.84                                                                                | 0.84                                                                                | 0.85                                                                                | 0.85                                                                                | 0.85                                                                                |
| Adj. Flow (vph)         | 80                                                                                | 941                                                                               | 24                                                                                | 86                                                                                | 753                                                                               | 69                                                                                | 206                                                                                | 14                                                                                  | 137                                                                                 | 56                                                                                  | 6                                                                                   | 36                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 1045                                                                              | 0                                                                                 | 0                                                                                 | 908                                                                               | 0                                                                                 | 0                                                                                  | 220                                                                                 | 137                                                                                 | 0                                                                                   | 62                                                                                  | 36                                                                                  |
| Turn Type               | pm+pt                                                                             | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  | Perm                                                                                | Perm                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases        | 1                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                  |                                                                                     | 4                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   |
| Detector Phase          | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                  | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0                                                                                | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |
| Minimum Split (s)       | 9.0                                                                               | 20.8                                                                              |                                                                                   | 20.8                                                                              | 20.8                                                                              |                                                                                   | 11.0                                                                               | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                |
| Total Split (s)         | 9.0                                                                               | 50.0                                                                              |                                                                                   | 41.0                                                                              | 41.0                                                                              |                                                                                   | 18.0                                                                               | 18.0                                                                                | 18.0                                                                                | 18.0                                                                                | 18.0                                                                                | 18.0                                                                                |
| Total Split (%)         | 10.0%                                                                             | 55.6%                                                                             |                                                                                   | 45.6%                                                                             | 45.6%                                                                             |                                                                                   | 20.0%                                                                              | 20.0%                                                                               | 20.0%                                                                               | 20.0%                                                                               | 20.0%                                                                               | 20.0%                                                                               |
| Yellow Time (s)         | 3.0                                                                               | 4.3                                                                               |                                                                                   | 4.3                                                                               | 4.3                                                                               |                                                                                   | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| All-Red Time (s)        | 1.0                                                                               | 1.5                                                                               |                                                                                   | 1.5                                                                               | 1.5                                                                               |                                                                                   | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     |                                                                                   | 5.8                                                                               |                                                                                   |                                                                                   | 5.8                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 | 4.0                                                                                 |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |
| Lead/Lag                | Lead                                                                              |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               |                                                                                   | Lag                                                                                | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode             | Min                                                                               | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Act Effct Green (s)     |                                                                                   | 56.9                                                                              |                                                                                   |                                                                                   | 47.4                                                                              |                                                                                   |                                                                                    | 23.3                                                                                | 23.3                                                                                |                                                                                     | 23.3                                                                                | 23.3                                                                                |
| Actuated g/C Ratio      |                                                                                   | 0.63                                                                              |                                                                                   |                                                                                   | 0.53                                                                              |                                                                                   |                                                                                    | 0.26                                                                                | 0.26                                                                                |                                                                                     | 0.26                                                                                | 0.26                                                                                |
| v/c Ratio               |                                                                                   | 0.63                                                                              |                                                                                   |                                                                                   | 0.70                                                                              |                                                                                   |                                                                                    | 0.64                                                                                | 0.26                                                                                |                                                                                     | 0.19                                                                                | 0.07                                                                                |
| Control Delay           |                                                                                   | 12.0                                                                              |                                                                                   |                                                                                   | 9.6                                                                               |                                                                                   |                                                                                    | 38.7                                                                                | 6.8                                                                                 |                                                                                     | 27.5                                                                                | 0.3                                                                                 |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             |                                                                                   | 12.0                                                                              |                                                                                   |                                                                                   | 9.6                                                                               |                                                                                   |                                                                                    | 38.7                                                                                | 6.8                                                                                 |                                                                                     | 27.5                                                                                | 0.3                                                                                 |
| LOS                     |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | D                                                                                   | A                                                                                   |                                                                                     | C                                                                                   | A                                                                                   |
| Approach Delay          |                                                                                   | 12.0                                                                              |                                                                                   |                                                                                   | 9.6                                                                               |                                                                                   |                                                                                    | 26.4                                                                                |                                                                                     |                                                                                     | 17.5                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 146                                                                               |                                                                                   |                                                                                   | 48                                                                                |                                                                                   |                                                                                    | 112                                                                                 | 3                                                                                   |                                                                                     | 28                                                                                  | 0                                                                                   |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & 2040-50 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

| Lane Group              | Ø3   |
|-------------------------|------|
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 3    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 22.0 |
| Total Split (s)         | 22.0 |
| Total Split (%)         | 24%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                | Lead |
| Lead-Lag Optimize?      | Yes  |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 207                                                                               |                                                                                   |                                                                                   | 148                                                                               |                                                                                   |                                                                                    | 167                                                                                 | 37                                                                                  |                                                                                     | 55                                                                                  | 0                                                                                   |
| Internal Link Dist (ft) |                                                                                   | 321                                                                               |                                                                                   |                                                                                   | 422                                                                               |                                                                                   |                                                                                    | 43                                                                                  |                                                                                     |                                                                                     | 57                                                                                  |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |
| Base Capacity (vph)     |                                                                                   | 1654                                                                              |                                                                                   |                                                                                   | 1298                                                                              |                                                                                   |                                                                                    | 346                                                                                 | 520                                                                                 |                                                                                     | 318                                                                                 | 520                                                                                 |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       |                                                                                   | 0.63                                                                              |                                                                                   |                                                                                   | 0.70                                                                              |                                                                                   |                                                                                    | 0.64                                                                                | 0.26                                                                                |                                                                                     | 0.19                                                                                | 0.07                                                                                |

## Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 13.5

Intersection LOS: B

Intersection Capacity Utilization 79.9%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                           |                                                                                       |                                                                                         |
|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|  Ø1      |  Ø2 (R) |  Ø3 |  Ø4 |
| 9 s                                                                                        | 41 s                                                                                      | 22 s                                                                                  | 18 s                                                                                    |
|  Ø6 (R) |                                                                                           |                                                                                       |                                                                                         |
| 50 s                                                                                       |                                                                                           |                                                                                       |                                                                                         |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø3 |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |



# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) 2040 Improved Concept B Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (vph)    | 26                                                                                | 989                                                                               | 107                                                                               | 48                                                                                | 765                                                                               | 7                                                                                 | 106                                                                                 | 13                                                                                  | 67                                                                                  | 6                                                                                   | 3                                                                                   | 15                                                                                  |
| Future Volume (vph)     | 26                                                                                | 989                                                                               | 107                                                                               | 48                                                                                | 765                                                                               | 7                                                                                 | 106                                                                                 | 13                                                                                  | 67                                                                                  | 6                                                                                   | 3                                                                                   | 15                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                  | 10                                                                                  | 10                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 0                                                                                 |                                                                                   | 0                                                                                 | 175                                                                               |                                                                                   | 0                                                                                 | 75                                                                                  |                                                                                     | 250                                                                                 | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes           | 0                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                   |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 50                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.986                                                                             |                                                                                   |                                                                                   | 0.999                                                                             |                                                                                   |                                                                                     | 0.874                                                                               |                                                                                     |                                                                                     | 0.876                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.999                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3370                                                                              | 0                                                                                 | 1770                                                                              | 1799                                                                              | 0                                                                                 | 1770                                                                                | 1520                                                                                | 0                                                                                   | 1770                                                                                | 1632                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.908                                                                             |                                                                                   | 0.233                                                                             |                                                                                   |                                                                                   | 0.742                                                                               |                                                                                     |                                                                                     | 0.694                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 3063                                                                              | 0                                                                                 | 434                                                                               | 1799                                                                              | 0                                                                                 | 1382                                                                                | 1520                                                                                | 0                                                                                   | 1293                                                                                | 1632                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 1                                                                                 |                                                                                   |                                                                                     | 82                                                                                  |                                                                                     |                                                                                     | 19                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 502                                                                               |                                                                                   |                                                                                   | 407                                                                               |                                                                                   |                                                                                     | 405                                                                                 |                                                                                     |                                                                                     | 198                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                     | 11.0                                                                                |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.82                                                                                | 0.82                                                                                | 0.82                                                                                | 0.80                                                                                | 0.80                                                                                | 0.80                                                                                |
| Adj. Flow (vph)         | 28                                                                                | 1063                                                                              | 115                                                                               | 50                                                                                | 797                                                                               | 7                                                                                 | 129                                                                                 | 16                                                                                  | 82                                                                                  | 8                                                                                   | 4                                                                                   | 19                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 1206                                                                              | 0                                                                                 | 50                                                                                | 804                                                                               | 0                                                                                 | 129                                                                                 | 98                                                                                  | 0                                                                                   | 8                                                                                   | 23                                                                                  | 0                                                                                   |
| Turn Type               | pm+pt                                                                             | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                                | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        | 1                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                     | 4                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   | 4                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 3.0                                                                               | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0                                                                                 | 7.0                                                                                 |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 7.3                                                                               | 21.3                                                                              |                                                                                   | 21.3                                                                              | 21.3                                                                              |                                                                                   | 11.9                                                                                | 11.9                                                                                |                                                                                     | 11.9                                                                                | 11.9                                                                                |                                                                                     |
| Total Split (s)         | 7.3                                                                               | 64.0                                                                              |                                                                                   | 56.7                                                                              | 56.7                                                                              |                                                                                   | 26.0                                                                                | 26.0                                                                                |                                                                                     | 26.0                                                                                | 26.0                                                                                |                                                                                     |
| Total Split (%)         | 8.1%                                                                              | 71.1%                                                                             |                                                                                   | 63.0%                                                                             | 63.0%                                                                             |                                                                                   | 28.9%                                                                               | 28.9%                                                                               |                                                                                     | 28.9%                                                                               | 28.9%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.3                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 3.0                                                                                 | 3.0                                                                                 |                                                                                     | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.0                                                                               | 1.3                                                                               |                                                                                   | 1.3                                                                               | 1.3                                                                               |                                                                                   | 1.9                                                                                 | 1.9                                                                                 |                                                                                     | 1.9                                                                                 | 1.9                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 6.3                                                                               |                                                                                   | 6.3                                                                               | 6.3                                                                               |                                                                                   | 4.9                                                                                 | 4.9                                                                                 |                                                                                     | 4.9                                                                                 | 4.9                                                                                 |                                                                                     |
| Lead/Lag                | Lead                                                                              |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | Max                                                                               | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                                | None                                                                                |                                                                                     | None                                                                                | None                                                                                |                                                                                     |
| Act Effct Green (s)     |                                                                                   | 66.6                                                                              |                                                                                   | 50.4                                                                              | 50.4                                                                              |                                                                                   | 12.2                                                                                | 12.2                                                                                |                                                                                     | 12.2                                                                                | 12.2                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.74                                                                              |                                                                                   | 0.56                                                                              | 0.56                                                                              |                                                                                   | 0.14                                                                                | 0.14                                                                                |                                                                                     | 0.14                                                                                | 0.14                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.52                                                                              |                                                                                   | 0.21                                                                              | 0.80                                                                              |                                                                                   | 0.69                                                                                | 0.35                                                                                |                                                                                     | 0.05                                                                                | 0.10                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 4.8                                                                               |                                                                                   | 10.1                                                                              | 15.6                                                                              |                                                                                   | 55.0                                                                                | 14.0                                                                                |                                                                                     | 31.3                                                                                | 16.4                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.1                                                                               |                                                                                   | 0.0                                                                               | 0.8                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 4.9                                                                               |                                                                                   | 10.1                                                                              | 16.4                                                                              |                                                                                   | 55.0                                                                                | 14.0                                                                                |                                                                                     | 31.3                                                                                | 16.4                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   | B                                                                                 | B                                                                                 |                                                                                   | D                                                                                   | B                                                                                   |                                                                                     | C                                                                                   | B                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 4.9                                                                               |                                                                                   |                                                                                   | 16.0                                                                              |                                                                                   |                                                                                     | 37.3                                                                                |                                                                                     |                                                                                     | 20.3                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | D                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 86                                                                                |                                                                                   | 8                                                                                 | 135                                                                               |                                                                                   | 71                                                                                  | 8                                                                                   |                                                                                     | 4                                                                                   | 2                                                                                   |                                                                                     |

# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) 2040 Improved Concept B Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 137                                                                               |                                                                                   | m17                                                                               | 233                                                                               |                                                                                   | 109                                                                                | 40                                                                                  |                                                                                     | 14                                                                                  | 18                                                                                  |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 422                                                                               |                                                                                   |                                                                                   | 327                                                                               |                                                                                   |                                                                                    | 325                                                                                 |                                                                                     |                                                                                     | 118                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   | 175                                                                               |                                                                                   |                                                                                   | 75                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 2306                                                                              |                                                                                   | 243                                                                               | 1007                                                                              |                                                                                   | 324                                                                                | 419                                                                                 |                                                                                     | 303                                                                                 | 397                                                                                 |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 212                                                                               |                                                                                   | 0                                                                                 | 53                                                                                |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.58                                                                              |                                                                                   | 0.21                                                                              | 0.84                                                                              |                                                                                   | 0.40                                                                               | 0.23                                                                                |                                                                                     | 0.03                                                                                | 0.06                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 81 (90%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 12.4

Intersection LOS: B

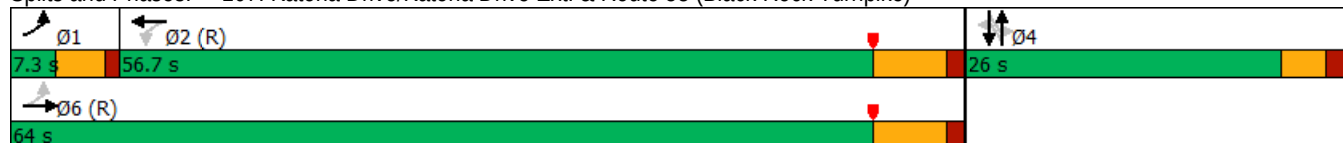
Intersection Capacity Utilization 71.5%

ICU Level of Service C

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)



## 108: Burroughs Road &amp; Route 58 (Black Rock Turnpike)

## 2040 Improved Concept B

## Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |  |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 86                                                                                | 973                                                                               | 15                                                                                | 7                                                                                 | 746                                                                               | 156                                                                               | 18                                                                                 | 110                                                                                 | 7                                                                                   | 129                                                                                 | 52                                                                                  | 52                                                                                  |
| Future Volume (vph)     | 86                                                                                | 973                                                                               | 15                                                                                | 7                                                                                 | 746                                                                               | 156                                                                               | 18                                                                                 | 110                                                                                 | 7                                                                                   | 129                                                                                 | 52                                                                                  | 52                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                 | 16                                                                                  | 12                                                                                  | 12                                                                                  | 16                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 150                                                                               | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes           | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 1                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 50                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 50                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                    | 0.993                                                                               |                                                                                     |                                                                                     | 0.970                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 0.993                                                                               |                                                                                     |                                                                                     | 0.973                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3401                                                                              | 0                                                                                 | 0                                                                                 | 1801                                                                              | 1583                                                                              | 0                                                                                  | 2082                                                                                | 0                                                                                   | 0                                                                                   | 1992                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.733                                                                             |                                                                                   |                                                                                   | 0.989                                                                             |                                                                                   |                                                                                    | 0.938                                                                               |                                                                                     |                                                                                     | 0.697                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 2503                                                                              | 0                                                                                 | 0                                                                                 | 1781                                                                              | 1583                                                                              | 0                                                                                  | 1966                                                                                | 0                                                                                   | 0                                                                                   | 1427                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 3                                                                                 |                                                                                   |                                                                                   |                                                                                   | 147                                                                               |                                                                                    | 3                                                                                   |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 407                                                                               |                                                                                   |                                                                                   | 390                                                                               |                                                                                   |                                                                                    | 466                                                                                 |                                                                                     |                                                                                     | 265                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                   | 8.9                                                                               |                                                                                   |                                                                                    | 12.7                                                                                |                                                                                     |                                                                                     | 7.2                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.99                                                                              | 0.99                                                                              | 0.99                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.90                                                                               | 0.90                                                                                | 0.90                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Adj. Flow (vph)         | 87                                                                                | 983                                                                               | 15                                                                                | 8                                                                                 | 811                                                                               | 170                                                                               | 20                                                                                 | 122                                                                                 | 8                                                                                   | 139                                                                                 | 56                                                                                  | 56                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 1085                                                                              | 0                                                                                 | 0                                                                                 | 819                                                                               | 170                                                                               | 0                                                                                  | 150                                                                                 | 0                                                                                   | 0                                                                                   | 251                                                                                 | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                | Perm                                                                              | Perm                                                                               | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   | 2                                                                                 | 4                                                                                  |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 6                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 | 2                                                                                 | 4                                                                                  | 4                                                                                   |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 15.0                                                                              | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              | 15.0                                                                              | 9.0                                                                                | 9.0                                                                                 |                                                                                     | 9.0                                                                                 | 9.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 20.6                                                                              | 20.6                                                                              |                                                                                   | 20.6                                                                              | 20.6                                                                              | 20.6                                                                              | 23.4                                                                               | 23.4                                                                                |                                                                                     | 14.4                                                                                | 14.4                                                                                |                                                                                     |
| Total Split (s)         | 60.0                                                                              | 60.0                                                                              |                                                                                   | 60.0                                                                              | 60.0                                                                              | 60.0                                                                              | 30.0                                                                               | 30.0                                                                                |                                                                                     | 30.0                                                                                | 30.0                                                                                |                                                                                     |
| Total Split (%)         | 66.7%                                                                             | 66.7%                                                                             |                                                                                   | 66.7%                                                                             | 66.7%                                                                             | 66.7%                                                                             | 33.3%                                                                              | 33.3%                                                                               |                                                                                     | 33.3%                                                                               | 33.3%                                                                               |                                                                                     |
| Yellow Time (s)         | 4.1                                                                               | 4.1                                                                               |                                                                                   | 4.1                                                                               | 4.1                                                                               | 4.1                                                                               | 3.1                                                                                | 3.1                                                                                 |                                                                                     | 3.1                                                                                 | 3.1                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.5                                                                               | 1.5                                                                               |                                                                                   | 1.5                                                                               | 1.5                                                                               | 1.5                                                                               | 2.3                                                                                | 2.3                                                                                 |                                                                                     | 2.3                                                                                 | 2.3                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   | 5.6                                                                               | 5.6                                                                               |                                                                                    | 5.4                                                                                 |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | C-Max                                                                             | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             | C-Max                                                                             | None                                                                               | None                                                                                |                                                                                     | None                                                                                | None                                                                                |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 60.7                                                                              |                                                                                   |                                                                                   | 60.7                                                                              | 60.7                                                                              |                                                                                    | 18.3                                                                                |                                                                                     |                                                                                     | 18.3                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.67                                                                              |                                                                                   |                                                                                   | 0.67                                                                              | 0.67                                                                              |                                                                                    | 0.20                                                                                |                                                                                     |                                                                                     | 0.20                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.64                                                                              |                                                                                   |                                                                                   | 0.68                                                                              | 0.15                                                                              |                                                                                    | 0.37                                                                                |                                                                                     |                                                                                     | 0.83                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 4.9                                                                               |                                                                                   |                                                                                   | 13.8                                                                              | 2.1                                                                               |                                                                                    | 31.6                                                                                |                                                                                     |                                                                                     | 53.8                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.1                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 4.9                                                                               |                                                                                   |                                                                                   | 14.0                                                                              | 2.1                                                                               |                                                                                    | 31.6                                                                                |                                                                                     |                                                                                     | 53.8                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 | A                                                                                 |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 4.9                                                                               |                                                                                   |                                                                                   | 11.9                                                                              |                                                                                   |                                                                                    | 31.6                                                                                |                                                                                     |                                                                                     | 53.8                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 108                                                                               |                                                                                   |                                                                                   | 250                                                                               | 4                                                                                 |                                                                                    | 72                                                                                  |                                                                                     |                                                                                     | 129                                                                                 |                                                                                     |

108: Burroughs Road & Route 58 (Black Rock Turnpike)  
Lanes, Volumes, Timings

2040 Improved Concept B  
Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 154                                                                               |                                                                                   |                                                                                   | 475                                                                               | 29                                                                                |                                                                                    | 116                                                                                 |                                                                                     |                                                                                     | 199                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 327                                                                               |                                                                                   |                                                                                   | 310                                                                               |                                                                                   |                                                                                    | 386                                                                                 |                                                                                     |                                                                                     | 185                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 150                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 1689                                                                              |                                                                                   |                                                                                   | 1201                                                                              | 1115                                                                              |                                                                                    | 539                                                                                 |                                                                                     |                                                                                     | 401                                                                                 |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 35                                                                                | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.64                                                                              |                                                                                   |                                                                                   | 0.70                                                                              | 0.15                                                                              |                                                                                    | 0.28                                                                                |                                                                                     |                                                                                     | 0.63                                                                                |                                                                                     |

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow, Master Intersection

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 14.3

Intersection LOS: B

Intersection Capacity Utilization 103.1%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                       |                                                                                       |
|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  Ø2 (R)  |   |   |
| 60 s                                                                                       | 30 s                                                                                  |                                                                                       |
|  Ø6 (R) |  |  |
| 60 s                                                                                       | 30 s                                                                                  |                                                                                       |

201: Tunxis Hill Road & Route 58 (Tunxis Hill Cutoff)  
Lanes, Volumes, Timings

2040 Improved Concept B

Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |  |  |
| Traffic Volume (vph)    | 630                                                                               | 6                                                                                 | 49                                                                                | 414                                                                               | 0                                                                                 | 84                                                                                |
| Future Volume (vph)     | 630                                                                               | 6                                                                                 | 49                                                                                | 414                                                                               | 0                                                                                 | 84                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 10                                                                                | 10                                                                                |
| Storage Length (ft)     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 50                                                                                |
| Storage Lanes           |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |
| Taper Length (ft)       |                                                                                   |                                                                                   | 25                                                                                |                                                                                   | 25                                                                                |                                                                                   |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.999                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |
| Flt Protected           |                                                                                   |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 3418                                                                              | 0                                                                                 | 0                                                                                 | 1792                                                                              | 1739                                                                              | 1478                                                                              |
| Flt Permitted           |                                                                                   |                                                                                   |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 3418                                                                              | 0                                                                                 | 0                                                                                 | 1792                                                                              | 1739                                                                              | 1478                                                                              |
| Link Speed (mph)        | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                | 25                                                                                |                                                                                   |
| Link Distance (ft)      | 1095                                                                              |                                                                                   |                                                                                   | 214                                                                               | 782                                                                               |                                                                                   |
| Travel Time (s)         | 24.9                                                                              |                                                                                   |                                                                                   | 4.9                                                                               | 21.3                                                                              |                                                                                   |
| Peak Hour Factor        | 0.95                                                                              | 0.95                                                                              | 0.90                                                                              | 0.90                                                                              | 0.83                                                                              | 0.83                                                                              |
| Adj. Flow (vph)         | 663                                                                               | 6                                                                                 | 54                                                                                | 460                                                                               | 0                                                                                 | 101                                                                               |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 669                                                                               | 0                                                                                 | 0                                                                                 | 514                                                                               | 0                                                                                 | 101                                                                               |
| Sign Control            | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 48.8% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1.3

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↑↑   |      |      | ↑    | ↑    | ↑    |
| Traffic Vol, veh/h       | 630  | 6    | 49   | 414  | 0    | 84   |
| Future Vol, veh/h        | 630  | 6    | 49   | 414  | 0    | 84   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | 0    | 50   |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 95   | 95   | 90   | 90   | 83   | 83   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 663  | 6    | 54   | 460  | 0    | 101  |

| Major/Minor          | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0      | 0      | 669    |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Critical Hdwy        | -      | -      | 4.13   |
| Critical Hdwy Stg 1  | -      | -      | -      |
| Critical Hdwy Stg 2  | -      | -      | -      |
| Follow-up Hdwy       | -      | -      | 2.219  |
| Pot Cap-1 Maneuver   | -      | -      | 919    |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | -      | -      | 919    |
| Mov Cap-2 Maneuver   | -      | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |

| Approach             | EB | WB | NB   |
|----------------------|----|----|------|
| HCM Control Delay, s | 0  | 1  | 11.4 |
| HCM LOS              |    |    | B    |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | -     | 662   | -   | -   | 919   | -   |
| HCM Lane V/C Ratio    | -     | 0.153 | -   | -   | 0.059 | -   |
| HCM Control Delay (s) | 0     | 11.4  | -   | -   | 9.2   | 0   |
| HCM Lane LOS          | A     | B     | -   | -   | A     | A   |
| HCM 95th %tile Q(veh) | -     | 0.5   | -   | -   | 0.2   | -   |

202: Route 732 (Black Rock Turnpike) & Judd Street  
Lanes, Volumes, Timings

2040 Improved Concept B  
Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations     |  |                                                                                   |  |  |  |                                                                                   |
| Traffic Volume (vph)    | 34                                                                                | 96                                                                                | 55                                                                                | 492                                                                               | 562                                                                               | 28                                                                                |
| Future Volume (vph)     | 34                                                                                | 96                                                                                | 55                                                                                | 492                                                                               | 562                                                                               | 28                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Storage Length (ft)     | 0                                                                                 | 0                                                                                 | 25                                                                                |                                                                                   |                                                                                   | 0                                                                                 |
| Storage Lanes           | 1                                                                                 | 0                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.900                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.994                                                                             |                                                                                   |
| Flt Protected           | 0.987                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1875                                                                              | 0                                                                                 | 1770                                                                              | 1863                                                                              | 1852                                                                              | 0                                                                                 |
| Flt Permitted           | 0.987                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1875                                                                              | 0                                                                                 | 1770                                                                              | 1863                                                                              | 1852                                                                              | 0                                                                                 |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 586                                                                               |                                                                                   |                                                                                   | 395                                                                               | 218                                                                               |                                                                                   |
| Travel Time (s)         | 16.0                                                                              |                                                                                   |                                                                                   | 9.0                                                                               | 5.0                                                                               |                                                                                   |
| Peak Hour Factor        | 0.83                                                                              | 0.83                                                                              | 0.91                                                                              | 0.91                                                                              | 0.95                                                                              | 0.95                                                                              |
| Adj. Flow (vph)         | 41                                                                                | 116                                                                               | 60                                                                                | 541                                                                               | 592                                                                               | 29                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 157                                                                               | 0                                                                                 | 60                                                                                | 541                                                                               | 621                                                                               | 0                                                                                 |
| Sign Control            | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 52.4% ICU Level of Service A

Analysis Period (min) 15



| Intersection             |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |      |
|--------------------------|-----------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 3.2                                                                               |        |                                                                                   |                                                                                   |                                                                                   |      |
| Movement                 | EBL                                                                               | EBR    | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |
| Lane Configurations      |  |        |  |  |  |      |
| Traffic Vol, veh/h       | 34                                                                                | 96     | 55                                                                                | 492                                                                               | 562                                                                               | 28   |
| Future Vol, veh/h        | 34                                                                                | 96     | 55                                                                                | 492                                                                               | 562                                                                               | 28   |
| Conflicting Peds, #/hr   | 0                                                                                 | 0      | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    |
| Sign Control             | Stop                                                                              | Stop   | Free                                                                              | Free                                                                              | Free                                                                              | Free |
| RT Channelized           | -                                                                                 | None   | -                                                                                 | None                                                                              | -                                                                                 | None |
| Storage Length           | 0                                                                                 | -      | 25                                                                                | -                                                                                 | -                                                                                 | -    |
| Veh in Median Storage, # | 0                                                                                 | -      | -                                                                                 | 0                                                                                 | 0                                                                                 | -    |
| Grade, %                 | 0                                                                                 | -      | -                                                                                 | 0                                                                                 | 0                                                                                 | -    |
| Peak Hour Factor         | 83                                                                                | 83     | 91                                                                                | 91                                                                                | 95                                                                                | 95   |
| Heavy Vehicles, %        | 2                                                                                 | 2      | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2    |
| Mvmt Flow                | 41                                                                                | 116    | 60                                                                                | 541                                                                               | 592                                                                               | 29   |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |      |
| Major/Minor              | Minor2                                                                            | Major1 |                                                                                   | Major2                                                                            |                                                                                   |      |
| Conflicting Flow All     | 1268                                                                              | 607    | 621                                                                               | 0                                                                                 | -                                                                                 | 0    |
| Stage 1                  | 607                                                                               | -      | -                                                                                 | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 661                                                                               | -      | -                                                                                 | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy            | 6.42                                                                              | 6.22   | 4.12                                                                              | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy Stg 1      | 5.42                                                                              | -      | -                                                                                 | -                                                                                 | -                                                                                 | -    |
| Critical Hdwy Stg 2      | 5.42                                                                              | -      | -                                                                                 | -                                                                                 | -                                                                                 | -    |
| Follow-up Hdwy           | 3.518                                                                             | 3.318  | 2.218                                                                             | -                                                                                 | -                                                                                 | -    |
| Pot Cap-1 Maneuver       | 186                                                                               | 496    | 960                                                                               | -                                                                                 | -                                                                                 | -    |
| Stage 1                  | 544                                                                               | -      | -                                                                                 | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 514                                                                               | -      | -                                                                                 | -                                                                                 | -                                                                                 | -    |
| Platoon blocked, %       |                                                                                   |        |                                                                                   | -                                                                                 | -                                                                                 | -    |
| Mov Cap-1 Maneuver       | 174                                                                               | 496    | 960                                                                               | -                                                                                 | -                                                                                 | -    |
| Mov Cap-2 Maneuver       | 174                                                                               | -      | -                                                                                 | -                                                                                 | -                                                                                 | -    |
| Stage 1                  | 510                                                                               | -      | -                                                                                 | -                                                                                 | -                                                                                 | -    |
| Stage 2                  | 514                                                                               | -      | -                                                                                 | -                                                                                 | -                                                                                 | -    |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |      |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |      |
| Approach                 | EB                                                                                | NB     |                                                                                   | SB                                                                                |                                                                                   |      |
| HCM Control Delay, s     | 24.9                                                                              | 0.9    |                                                                                   | 0                                                                                 |                                                                                   |      |
| HCM LOS                  | C                                                                                 |        |                                                                                   |                                                                                   |                                                                                   |      |
|                          |                                                                                   |        |                                                                                   |                                                                                   |                                                                                   |      |
| Minor Lane/Major Mvmt    | NBL                                                                               | NBT    | EBLn1                                                                             | SBT                                                                               | SBR                                                                               |      |
| Capacity (veh/h)         | 960                                                                               | -      | 334                                                                               | -                                                                                 | -                                                                                 |      |
| HCM Lane V/C Ratio       | 0.063                                                                             | -      | 0.469                                                                             | -                                                                                 | -                                                                                 |      |
| HCM Control Delay (s)    | 9                                                                                 | -      | 24.9                                                                              | -                                                                                 | -                                                                                 |      |
| HCM Lane LOS             | A                                                                                 | -      | C                                                                                 | -                                                                                 | -                                                                                 |      |
| HCM 95th %tile O(veh)    | 0.2                                                                               | -      | 2.4                                                                               | -                                                                                 | -                                                                                 |      |

203: Moritz Place & Route 58 (Black Rock Turnpike)  
Lanes, Volumes, Timings

2040 Improved Concept B  
Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations     |  |                                                                                   |                                                                                   |  |                                                                                   |  |
| Traffic Volume (vph)    | 1101                                                                              | 3                                                                                 | 0                                                                                 | 877                                                                               | 0                                                                                 | 11                                                                                |
| Future Volume (vph)     | 1101                                                                              | 3                                                                                 | 0                                                                                 | 877                                                                               | 0                                                                                 | 11                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.865                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Flt Protected           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1863                                                                              | 0                                                                                 | 0                                                                                 | 1863                                                                              | 0                                                                                 | 1611                                                                              |
| Flt Permitted           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1863                                                                              | 0                                                                                 | 0                                                                                 | 1863                                                                              | 0                                                                                 | 1611                                                                              |
| Link Speed (mph)        | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 187                                                                               |                                                                                   |                                                                                   | 131                                                                               | 186                                                                               |                                                                                   |
| Travel Time (s)         | 4.3                                                                               |                                                                                   |                                                                                   | 3.0                                                                               | 4.2                                                                               |                                                                                   |
| Peak Hour Factor        | 0.97                                                                              | 0.97                                                                              | 0.92                                                                              | 0.92                                                                              | 0.80                                                                              | 0.80                                                                              |
| Adj. Flow (vph)         | 1135                                                                              | 3                                                                                 | 0                                                                                 | 953                                                                               | 0                                                                                 | 14                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 1138                                                                              | 0                                                                                 | 0                                                                                 | 953                                                                               | 0                                                                                 | 14                                                                                |
| Sign Control            | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 68.1% ICU Level of Service C

Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.1

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↔    |      |      | ↑    |      | ↗    |
| Traffic Vol, veh/h       | 1101 | 3    | 0    | 877  | 0    | 11   |
| Future Vol, veh/h        | 1101 | 3    | 0    | 877  | 0    | 11   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | 0    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 97   | 97   | 92   | 92   | 80   | 80   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 1135 | 3    | 0    | 953  | 0    | 14   |

| Major/Minor          | Major1 | Major2 | Minor1      |
|----------------------|--------|--------|-------------|
| Conflicting Flow All | 0      | 0      | - - - 1137  |
| Stage 1              | -      | -      | - - -       |
| Stage 2              | -      | -      | - - -       |
| Critical Hdwy        | -      | -      | - - - 6.22  |
| Critical Hdwy Stg 1  | -      | -      | - - -       |
| Critical Hdwy Stg 2  | -      | -      | - - -       |
| Follow-up Hdwy       | -      | -      | - - - 3.318 |
| Pot Cap-1 Maneuver   | -      | -      | 0 - 0 246   |
| Stage 1              | -      | -      | 0 - 0 -     |
| Stage 2              | -      | -      | 0 - 0 -     |
| Platoon blocked, %   | -      | -      | -           |
| Mov Cap-1 Maneuver   | -      | -      | - - - 246   |
| Mov Cap-2 Maneuver   | -      | -      | - - -       |
| Stage 1              | -      | -      | - - -       |
| Stage 2              | -      | -      | - - -       |

| Approach             | EB | WB | NB   |
|----------------------|----|----|------|
| HCM Control Delay, s | 0  | 0  | 20.5 |
| HCM LOS              |    |    | C    |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h)      | 246   | -   | -   | -   |
| HCM Lane V/C Ratio    | 0.056 | -   | -   | -   |
| HCM Control Delay (s) | 20.5  | -   | -   | -   |
| HCM Lane LOS          | C     | -   | -   | -   |
| HCM 95th %tile Q(veh) | 0.2   | -   | -   | -   |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Talbot Drive Concept B Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 6                                                                                 | 1                                                                                 | 2                                                                                 | 75                                                                                | 1                                                                                 | 111                                                                               | 2                                                                                  | 820                                                                                 | 77                                                                                  | 71                                                                                  | 895                                                                                 | 8                                                                                   |
| Future Volume (vph)     | 6                                                                                 | 1                                                                                 | 2                                                                                 | 75                                                                                | 1                                                                                 | 111                                                                               | 2                                                                                  | 820                                                                                 | 77                                                                                  | 71                                                                                  | 895                                                                                 | 8                                                                                   |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                 | 13                                                                                  | 12                                                                                  | 12                                                                                  | 13                                                                                  | 12                                                                                  |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.966                                                                             |                                                                                   |                                                                                   | 0.920                                                                             |                                                                                   |                                                                                    | 0.988                                                                               |                                                                                     |                                                                                     | 0.999                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.968                                                                             |                                                                                   |                                                                                   | 0.980                                                                             |                                                                                   |                                                                                    | 0.999                                                                               |                                                                                     |                                                                                     | 0.996                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 1974                                                                              | 0                                                                                 | 0                                                                                 | 1903                                                                              | 0                                                                                 | 0                                                                                  | 1902                                                                                | 0                                                                                   | 0                                                                                   | 1915                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.743                                                                             |                                                                                   |                                                                                   | 0.864                                                                             |                                                                                   |                                                                                    | 0.999                                                                               |                                                                                     |                                                                                     | 0.868                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 1515                                                                              | 0                                                                                 | 0                                                                                 | 1678                                                                              | 0                                                                                 | 0                                                                                  | 1900                                                                                | 0                                                                                   | 0                                                                                   | 1669                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 3                                                                                 |                                                                                   |                                                                                   | 61                                                                                |                                                                                   |                                                                                    | 12                                                                                  |                                                                                     |                                                                                     | 1                                                                                   |                                                                                     |
| Link Speed (mph)        |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 35                                                                                  |                                                                                     |                                                                                     | 35                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 378                                                                               |                                                                                   |                                                                                   | 442                                                                               |                                                                                   |                                                                                    | 1898                                                                                |                                                                                     |                                                                                     | 522                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 10.3                                                                              |                                                                                   |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                    | 37.0                                                                                |                                                                                     |                                                                                     | 10.2                                                                                |                                                                                     |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.94                                                                               | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                |
| Adj. Flow (vph)         | 8                                                                                 | 1                                                                                 | 3                                                                                 | 94                                                                                | 1                                                                                 | 139                                                                               | 2                                                                                  | 872                                                                                 | 82                                                                                  | 76                                                                                  | 952                                                                                 | 9                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 12                                                                                | 0                                                                                 | 0                                                                                 | 234                                                                               | 0                                                                                 | 0                                                                                  | 956                                                                                 | 0                                                                                   | 0                                                                                   | 1037                                                                                | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                    | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Permitted Phases        | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   | 2                                                                                  |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 4                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |                                                                                   | 2                                                                                  | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 15.0                                                                               | 15.0                                                                                |                                                                                     | 15.0                                                                                | 15.0                                                                                |                                                                                     |
| Minimum Split (s)       | 11.7                                                                              | 11.7                                                                              |                                                                                   | 11.7                                                                              | 11.7                                                                              |                                                                                   | 20.6                                                                               | 20.6                                                                                |                                                                                     | 20.6                                                                                | 20.6                                                                                |                                                                                     |
| Total Split (s)         | 23.0                                                                              | 23.0                                                                              |                                                                                   | 23.0                                                                              | 23.0                                                                              |                                                                                   | 82.0                                                                               | 82.0                                                                                |                                                                                     | 82.0                                                                                | 82.0                                                                                |                                                                                     |
| Total Split (%)         | 21.9%                                                                             | 21.9%                                                                             |                                                                                   | 21.9%                                                                             | 21.9%                                                                             |                                                                                   | 78.1%                                                                              | 78.1%                                                                               |                                                                                     | 78.1%                                                                               | 78.1%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.3                                                                               | 3.3                                                                               |                                                                                   | 3.3                                                                               | 3.3                                                                               |                                                                                   | 4.0                                                                                | 4.0                                                                                 |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.4                                                                               | 1.4                                                                               |                                                                                   | 1.4                                                                               | 1.4                                                                               |                                                                                   | 1.6                                                                                | 1.6                                                                                 |                                                                                     | 1.6                                                                                 | 1.6                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                    | 5.6                                                                                 |                                                                                     |                                                                                     | 5.6                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              |                                                                                   | C-Min                                                                              | C-Min                                                                               |                                                                                     | C-Min                                                                               | C-Min                                                                               |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 14.7                                                                              |                                                                                   |                                                                                   | 14.7                                                                              |                                                                                   |                                                                                    | 80.0                                                                                |                                                                                     |                                                                                     | 80.0                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.14                                                                              |                                                                                   |                                                                                   | 0.14                                                                              |                                                                                   |                                                                                    | 0.76                                                                                |                                                                                     |                                                                                     | 0.76                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.06                                                                              |                                                                                   |                                                                                   | 0.82                                                                              |                                                                                   |                                                                                    | 0.66                                                                                |                                                                                     |                                                                                     | 0.82                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 32.3                                                                              |                                                                                   |                                                                                   | 53.6                                                                              |                                                                                   |                                                                                    | 8.7                                                                                 |                                                                                     |                                                                                     | 15.9                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 32.3                                                                              |                                                                                   |                                                                                   | 53.6                                                                              |                                                                                   |                                                                                    | 8.7                                                                                 |                                                                                     |                                                                                     | 15.9                                                                                |                                                                                     |
| LOS                     |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 32.3                                                                              |                                                                                   |                                                                                   | 53.6                                                                              |                                                                                   |                                                                                    | 8.7                                                                                 |                                                                                     |                                                                                     | 15.9                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   | 113                                                                               |                                                                                   |                                                                                    | 217                                                                                 |                                                                                     |                                                                                     | 383                                                                                 |                                                                                     |
| Queue Length 95th (ft)  |                                                                                   | 19                                                                                |                                                                                   |                                                                                   | 164                                                                               |                                                                                   |                                                                                    | 401                                                                                 |                                                                                     |                                                                                     | 696                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 298                                                                               |                                                                                   |                                                                                   | 362                                                                               |                                                                                   |                                                                                    | 1818                                                                                |                                                                                     |                                                                                     | 442                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Base Capacity (vph)    |                                                                                   | 266                                                                               |                                                                                   |                                                                                   | 342                                                                               |                                                                                   |                                                                                    | 1449                                                                                |                                                                                     |                                                                                     | 1271                                                                                |                                                                                     |
| Starvation Cap Reductn |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   | 0.05                                                                              |                                                                                   |                                                                                   | 0.68                                                                              |                                                                                   |                                                                                    | 0.66                                                                                |                                                                                     |                                                                                     | 0.82                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 105

Actuated Cycle Length: 105

Offset: 99 (94%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 16.9

Intersection LOS: B

Intersection Capacity Utilization 122.8%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

|                                                                                          |                                                                                     |                                                                                     |      |
|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
|  Ø2 (R) |  |  | Ø4   |
| 82 s                                                                                     |                                                                                     |                                                                                     | 23 s |
|  Ø6 (R) |  |  | Ø8   |
| 82 s                                                                                     |                                                                                     |                                                                                     | 23 s |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

## Lanes, Volumes, Timings

2040 Improved Concept B

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |      |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3   |
| Lane Configurations     |  |  |  |  |  |  |      |
| Traffic Volume (vph)    | 120                                                                               | 207                                                                               | 144                                                                               | 803                                                                               | 810                                                                               | 77                                                                                |      |
| Future Volume (vph)     | 120                                                                               | 207                                                                               | 144                                                                               | 803                                                                               | 810                                                                               | 77                                                                                |      |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |      |
| Lane Width (ft)         | 10                                                                                | 10                                                                                | 11                                                                                | 11                                                                                | 12                                                                                | 12                                                                                |      |
| Storage Length (ft)     | 0                                                                                 | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   | 50                                                                                |      |
| Storage Lanes           | 1                                                                                 | 1                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 1                                                                                 |      |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |      |
| Frt                     |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |      |
| Flt Protected           | 0.950                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |      |
| Satd. Flow (prot)       | 1652                                                                              | 1478                                                                              | 1711                                                                              | 3421                                                                              | 1863                                                                              | 1583                                                                              |      |
| Flt Permitted           | 0.950                                                                             |                                                                                   | 0.148                                                                             |                                                                                   |                                                                                   |                                                                                   |      |
| Satd. Flow (perm)       | 1652                                                                              | 1478                                                                              | 266                                                                               | 3421                                                                              | 1863                                                                              | 1583                                                                              |      |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |      |
| Satd. Flow (RTOR)       |                                                                                   | 196                                                                               |                                                                                   |                                                                                   |                                                                                   | 19                                                                                |      |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 35                                                                                |                                                                                   |      |
| Link Distance (ft)      | 445                                                                               |                                                                                   |                                                                                   | 510                                                                               | 341                                                                               |                                                                                   |      |
| Travel Time (s)         | 12.1                                                                              |                                                                                   |                                                                                   | 11.6                                                                              | 6.6                                                                               |                                                                                   |      |
| Peak Hour Factor        | 0.82                                                                              | 0.82                                                                              | 0.98                                                                              | 0.98                                                                              | 0.90                                                                              | 0.90                                                                              |      |
| Adj. Flow (vph)         | 146                                                                               | 252                                                                               | 147                                                                               | 819                                                                               | 900                                                                               | 86                                                                                |      |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Group Flow (vph)   | 146                                                                               | 252                                                                               | 147                                                                               | 819                                                                               | 900                                                                               | 86                                                                                |      |
| Turn Type               | Prot                                                                              | Perm                                                                              | pm+pt                                                                             | NA                                                                                | NA                                                                                | Perm                                                                              |      |
| Protected Phases        | 4                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 | 2                                                                                 |                                                                                   | 3    |
| Permitted Phases        |                                                                                   | 4                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |      |
| Detector Phase          | 4                                                                                 | 4                                                                                 | 1                                                                                 | 6                                                                                 | 2                                                                                 | 2                                                                                 |      |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               | 5.0                                                                               | 15.0                                                                              | 15.0                                                                              | 15.0                                                                              | 7.0  |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              | 9.2                                                                               | 21.9                                                                              | 21.9                                                                              | 21.9                                                                              | 22.0 |
| Total Split (s)         | 14.0                                                                              | 14.0                                                                              | 10.4                                                                              | 69.0                                                                              | 58.6                                                                              | 58.6                                                                              | 22.0 |
| Total Split (%)         | 13.3%                                                                             | 13.3%                                                                             | 9.9%                                                                              | 65.7%                                                                             | 55.8%                                                                             | 55.8%                                                                             | 21%  |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               | 3.2                                                                               | 4.9                                                                               | 4.9                                                                               | 4.9                                                                               | 4.0  |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.0                                                                               | 2.0                                                                               | 2.0                                                                               | 2.0                                                                               | 0.0  |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |      |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               | 4.2                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               |      |
| Lead/Lag                | Lag                                                                               | Lag                                                                               | Lead                                                                              |                                                                                   | Lag                                                                               | Lag                                                                               | Lead |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               | Yes  |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | C-Min                                                                             | C-Min                                                                             | C-Min                                                                             | None |
| Act Effct Green (s)     | 15.5                                                                              | 15.5                                                                              | 81.3                                                                              | 78.6                                                                              | 64.4                                                                              | 64.4                                                                              |      |
| Actuated g/C Ratio      | 0.15                                                                              | 0.15                                                                              | 0.77                                                                              | 0.75                                                                              | 0.61                                                                              | 0.61                                                                              |      |
| v/c Ratio               | 0.60                                                                              | 0.66                                                                              | 0.43                                                                              | 0.32                                                                              | 0.79                                                                              | 0.09                                                                              |      |
| Control Delay           | 52.1                                                                              | 19.4                                                                              | 12.0                                                                              | 3.9                                                                               | 18.5                                                                              | 8.6                                                                               |      |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |      |
| Total Delay             | 52.1                                                                              | 19.4                                                                              | 12.0                                                                              | 3.9                                                                               | 18.5                                                                              | 8.6                                                                               |      |
| LOS                     | D                                                                                 | B                                                                                 | B                                                                                 | A                                                                                 | B                                                                                 | A                                                                                 |      |
| Approach Delay          | 31.4                                                                              |                                                                                   |                                                                                   | 5.2                                                                               | 17.6                                                                              |                                                                                   |      |
| Approach LOS            | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 | B                                                                                 |                                                                                   |      |
| Queue Length 50th (ft)  | 93                                                                                | 34                                                                                | 15                                                                                | 56                                                                                | 238                                                                               | 6                                                                                 |      |

# 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive Lanes, Volumes, Timings

2040 Improved Concept B  
Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |    |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               | Ø3 |
| Queue Length 95th (ft)  | 137                                                                               | 87                                                                                | 84                                                                                | 104                                                                               | #789                                                                              | m28                                                                               |    |
| Internal Link Dist (ft) | 365                                                                               |                                                                                   |                                                                                   | 430                                                                               | 261                                                                               |                                                                                   |    |
| Turn Bay Length (ft)    |                                                                                   | 50                                                                                | 100                                                                               |                                                                                   |                                                                                   | 50                                                                                |    |
| Base Capacity (vph)     | 243                                                                               | 384                                                                               | 343                                                                               | 2562                                                                              | 1143                                                                              | 978                                                                               |    |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |    |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |    |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |    |
| Reduced v/c Ratio       | 0.60                                                                              | 0.66                                                                              | 0.43                                                                              | 0.32                                                                              | 0.79                                                                              | 0.09                                                                              |    |

## Intersection Summary

Area Type: Other

Cycle Length: 105

Actuated Cycle Length: 105

Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 14.8

Intersection LOS: B

Intersection Capacity Utilization 70.7%

ICU Level of Service C

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

|                                                                                            |                                                                                            |                                                                                          |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø3 |  Ø4 |
| 10.4 s                                                                                     | 58.6 s                                                                                     | 22 s                                                                                     | 14 s                                                                                     |
|  Ø6 (R) |                                                                                            |                                                                                          |                                                                                          |
| 69 s                                                                                       |                                                                                            |                                                                                          |                                                                                          |



# 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Drive 2040 Improved Concept B Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 89                                                                                | 0                                                                                 | 59                                                                                | 3                                                                                 | 2                                                                                 | 41                                                                                | 54                                                                                 | 900                                                                                 | 1                                                                                   | 7                                                                                   | 952                                                                                 | 108                                                                                 |
| Future Volume (vph)     | 89                                                                                | 0                                                                                 | 59                                                                                | 3                                                                                 | 2                                                                                 | 41                                                                                | 54                                                                                 | 900                                                                                 | 1                                                                                   | 7                                                                                   | 952                                                                                 | 108                                                                                 |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 16                                                                                | 12                                                                                | 12                                                                                 | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 50                                                                                |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 200                                                                                 |                                                                                     | 0                                                                                   |
| Storage Lanes           | 1                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 50                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 50                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                               | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Frt                     |                                                                                   | 0.875                                                                             |                                                                                   |                                                                                   | 0.880                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.985                                                                               |                                                                                     |
| Flt Protected           | 0.950                                                                             | 0.992                                                                             |                                                                                   |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                    | 0.997                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1905                                                                              | 1536                                                                              | 0                                                                                 | 0                                                                                 | 1850                                                                              | 0                                                                                 | 0                                                                                  | 3529                                                                                | 0                                                                                   | 0                                                                                   | 3486                                                                                | 0                                                                                   |
| Flt Permitted           | 0.950                                                                             | 0.992                                                                             |                                                                                   |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                    | 0.806                                                                               |                                                                                     |                                                                                     | 0.949                                                                               |                                                                                     |
| Satd. Flow (perm)       | 1905                                                                              | 1536                                                                              | 0                                                                                 | 0                                                                                 | 1850                                                                              | 0                                                                                 | 0                                                                                  | 2853                                                                                | 0                                                                                   | 0                                                                                   | 3308                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 128                                                                               |                                                                                   |                                                                                   | 48                                                                                |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 20                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 347                                                                               |                                                                                   |                                                                                   | 133                                                                               |                                                                                   |                                                                                    | 293                                                                                 |                                                                                     |                                                                                     | 336                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.5                                                                               |                                                                                   |                                                                                   | 3.6                                                                               |                                                                                   |                                                                                    | 6.7                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.83                                                                              | 0.83                                                                              | 0.83                                                                              | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 0.98                                                                               | 0.98                                                                                | 0.98                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Adj. Flow (vph)         | 107                                                                               | 0                                                                                 | 71                                                                                | 4                                                                                 | 2                                                                                 | 48                                                                                | 55                                                                                 | 918                                                                                 | 1                                                                                   | 7                                                                                   | 992                                                                                 | 113                                                                                 |
| Shared Lane Traffic (%) | 13%                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 93                                                                                | 85                                                                                | 0                                                                                 | 0                                                                                 | 54                                                                                | 0                                                                                 | 0                                                                                  | 974                                                                                 | 0                                                                                   | 0                                                                                   | 1112                                                                                | 0                                                                                   |
| Turn Type               | Split                                                                             | NA                                                                                |                                                                                   | Split                                                                             | NA                                                                                |                                                                                   | pm+pt                                                                              | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        | 4                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 2                                                                                  |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 4                                                                                 | 4                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 9.0                                                                               | 9.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                                | 15.0                                                                                |                                                                                     | 15.0                                                                                | 15.0                                                                                |                                                                                     |
| Minimum Split (s)       | 13.0                                                                              | 13.0                                                                              |                                                                                   | 9.0                                                                               | 9.0                                                                               |                                                                                   | 10.9                                                                               | 20.4                                                                                |                                                                                     | 20.4                                                                                | 20.4                                                                                |                                                                                     |
| Total Split (s)         | 16.0                                                                              | 16.0                                                                              |                                                                                   | 11.0                                                                              | 11.0                                                                              |                                                                                   | 10.9                                                                               | 78.0                                                                                |                                                                                     | 67.1                                                                                | 67.1                                                                                |                                                                                     |
| Total Split (%)         | 15.2%                                                                             | 15.2%                                                                             |                                                                                   | 10.5%                                                                             | 10.5%                                                                             |                                                                                   | 10.4%                                                                              | 74.3%                                                                               |                                                                                     | 63.9%                                                                               | 63.9%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 4.2                                                                                | 4.2                                                                                 |                                                                                     | 4.2                                                                                 | 4.2                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               |                                                                                   | 1.0                                                                               | 1.0                                                                               |                                                                                   | 1.7                                                                                | 1.2                                                                                 |                                                                                     | 1.2                                                                                 | 1.2                                                                                 |                                                                                     |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                    | 5.4                                                                                 |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Lag                                                                                |                                                                                     |                                                                                     | Lead                                                                                | Lead                                                                                |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Yes                                                                                |                                                                                     |                                                                                     | Yes                                                                                 | Yes                                                                                 |                                                                                     |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              |                                                                                   | None                                                                               | C-Min                                                                               |                                                                                     | C-Min                                                                               | C-Min                                                                               |                                                                                     |
| Act Effect Green (s)    | 10.4                                                                              | 10.4                                                                              |                                                                                   |                                                                                   | 6.7                                                                               |                                                                                   |                                                                                    | 76.5                                                                                |                                                                                     |                                                                                     | 76.5                                                                                |                                                                                     |
| Actuated g/C Ratio      | 0.10                                                                              | 0.10                                                                              |                                                                                   |                                                                                   | 0.06                                                                              |                                                                                   |                                                                                    | 0.73                                                                                |                                                                                     |                                                                                     | 0.73                                                                                |                                                                                     |
| v/c Ratio               | 0.49                                                                              | 0.32                                                                              |                                                                                   |                                                                                   | 0.33                                                                              |                                                                                   |                                                                                    | 0.47                                                                                |                                                                                     |                                                                                     | 0.46                                                                                |                                                                                     |
| Control Delay           | 53.6                                                                              | 5.6                                                                               |                                                                                   |                                                                                   | 21.7                                                                              |                                                                                   |                                                                                    | 5.4                                                                                 |                                                                                     |                                                                                     | 3.5                                                                                 |                                                                                     |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.1                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             | 53.6                                                                              | 5.6                                                                               |                                                                                   |                                                                                   | 21.7                                                                              |                                                                                   |                                                                                    | 5.5                                                                                 |                                                                                     |                                                                                     | 3.5                                                                                 |                                                                                     |
| LOS                     | D                                                                                 | A                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 30.7                                                                              |                                                                                   |                                                                                   | 21.7                                                                              |                                                                                   |                                                                                    | 5.5                                                                                 |                                                                                     |                                                                                     | 3.5                                                                                 |                                                                                     |
| Approach LOS            |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Queue Length 50th (ft)  | 64                                                                                | 0                                                                                 |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                    | 117                                                                                 |                                                                                     |                                                                                     | 68                                                                                  |                                                                                     |

# 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Driveway 2040 Improved Concept B Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  | 105                                                                               | 10                                                                                |                                                                                   |                                                                                   | 37                                                                                |                                                                                   |                                                                                    | 97                                                                                  |                                                                                     |                                                                                     | 67                                                                                  |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 267                                                                               |                                                                                   |                                                                                   | 53                                                                                |                                                                                   |                                                                                    | 213                                                                                 |                                                                                     |                                                                                     | 256                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     | 222                                                                               | 292                                                                               |                                                                                   |                                                                                   | 175                                                                               |                                                                                   |                                                                                    | 2096                                                                                |                                                                                     |                                                                                     | 2414                                                                                |                                                                                     |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 246                                                                                 |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 1                                                                                   |                                                                                     |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       | 0.42                                                                              | 0.29                                                                              |                                                                                   |                                                                                   | 0.31                                                                              |                                                                                   |                                                                                    | 0.53                                                                                |                                                                                     |                                                                                     | 0.46                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 105

Actuated Cycle Length: 105

Offset: 46 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.49

Intersection Signal Delay: 6.8

Intersection LOS: A

Intersection Capacity Utilization 79.7%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Driveway

|                                                                                            |                                                                                          |                                                                                         |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|  Ø2 (R)  |  Ø4  |  Ø8 |
| 78 s                                                                                       | 16 s                                                                                     | 11 s                                                                                    |
|  Ø6 (R) |  Ø5 |                                                                                         |
| 67.1 s                                                                                     | 10.9 s                                                                                   |                                                                                         |

# 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Blvd Intersect Concept B Lanes, Volumes, Timings

Timing Plan: Saturday Midday

| Lane Group              | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR  | SBL   | SBT   | SBR  |
|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|------|
| Lane Configurations     |       |       |       |       |       |       |       |       |      |       |       |      |
| Traffic Volume (vph)    | 36    | 19    | 42    | 88    | 22    | 131   | 36    | 835   | 75   | 108   | 881   | 43   |
| Future Volume (vph)     | 36    | 19    | 42    | 88    | 22    | 131   | 36    | 835   | 75   | 108   | 881   | 43   |
| Ideal Flow (vphpl)      | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900  | 1900 | 1900  | 1900  | 1900 |
| Lane Width (ft)         | 12    | 12    | 12    | 12    | 12    | 11    | 12    | 11    | 12   | 12    | 11    | 12   |
| Storage Length (ft)     | 0     |       | 0     | 0     |       | 75    | 200   |       | 0    | 0     |       | 0    |
| Storage Lanes           | 0     |       | 1     | 0     |       | 1     | 1     |       | 0    | 1     |       | 0    |
| Taper Length (ft)       | 25    |       |       | 25    |       |       | 25    |       |      | 25    |       |      |
| Lane Util. Factor       | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 0.95  | 0.95 | 1.00  | 1.00  | 1.00 |
| Frt                     |       |       | 0.850 |       |       | 0.850 |       | 0.988 |      |       | 0.993 |      |
| Flt Protected           |       | 0.968 |       |       | 0.962 |       | 0.950 |       |      | 0.950 |       |      |
| Satd. Flow (prot)       | 0     | 1803  | 1583  | 0     | 1792  | 1531  | 1770  | 3380  | 0    | 1770  | 1788  | 0    |
| Flt Permitted           |       | 0.673 |       |       | 0.727 |       | 0.263 |       |      | 0.244 |       |      |
| Satd. Flow (perm)       | 0     | 1254  | 1583  | 0     | 1354  | 1531  | 490   | 3380  | 0    | 455   | 1788  | 0    |
| Right Turn on Red       |       |       | Yes   |       |       | No    |       |       | Yes  |       |       | Yes  |
| Satd. Flow (RTOR)       |       |       | 91    |       |       |       |       | 15    |      |       | 6     |      |
| Link Speed (mph)        |       | 30    |       |       | 25    |       |       | 30    |      |       | 30    |      |
| Link Distance (ft)      |       | 97    |       |       | 499   |       |       | 535   |      |       | 293   |      |
| Travel Time (s)         |       | 2.2   |       |       | 13.6  |       |       | 12.2  |      |       | 6.7   |      |
| Peak Hour Factor        | 0.88  | 0.88  | 0.88  | 0.80  | 0.80  | 0.80  | 0.97  | 0.97  | 0.97 | 0.96  | 0.96  | 0.96 |
| Adj. Flow (vph)         | 41    | 22    | 48    | 110   | 28    | 164   | 37    | 861   | 77   | 113   | 918   | 45   |
| Shared Lane Traffic (%) |       |       |       |       |       |       |       |       |      |       |       |      |
| Lane Group Flow (vph)   | 0     | 63    | 48    | 0     | 138   | 164   | 37    | 938   | 0    | 113   | 963   | 0    |
| Turn Type               | Perm  | NA    | Perm  | Perm  | NA    | Perm  | Perm  | NA    |      | pm+pt | NA    |      |
| Protected Phases        |       | 4     |       |       | 8     |       |       | 2     |      | 1     | 6     |      |
| Permitted Phases        | 4     |       | 4     | 8     |       | 8     | 2     |       |      | 6     |       |      |
| Detector Phase          | 4     | 4     | 4     | 8     | 8     | 8     | 2     | 2     |      | 1     | 6     |      |
| Switch Phase            |       |       |       |       |       |       |       |       |      |       |       |      |
| Minimum Initial (s)     | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 15.0  | 15.0  |      | 3.0   | 15.0  |      |
| Minimum Split (s)       | 13.0  | 13.0  | 13.0  | 13.0  | 13.0  | 13.0  | 20.3  | 20.3  |      | 9.5   | 20.3  |      |
| Total Split (s)         | 24.0  | 24.0  | 24.0  | 24.0  | 24.0  | 24.0  | 67.0  | 67.0  |      | 14.0  | 81.0  |      |
| Total Split (%)         | 22.9% | 22.9% | 22.9% | 22.9% | 22.9% | 22.9% | 63.8% | 63.8% |      | 13.3% | 77.1% |      |
| Yellow Time (s)         | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 4.3   | 4.3   |      | 4.3   | 4.3   |      |
| All-Red Time (s)        | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |      | 2.2   | 1.0   |      |
| Lost Time Adjust (s)    |       | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   | 0.0   |      | 0.0   | 0.0   |      |
| Total Lost Time (s)     |       | 4.0   | 4.0   |       | 4.0   | 4.0   | 5.3   | 5.3   |      | 6.5   | 5.3   |      |
| Lead/Lag                |       |       |       |       |       |       | Lag   | Lag   |      | Lead  |       |      |
| Lead-Lag Optimize?      |       |       |       |       |       |       | Yes   | Yes   |      | Yes   |       |      |
| Recall Mode             | None  | None  | None  | None  | None  | None  | C-Max | C-Max |      | None  | C-Max |      |
| Act Effct Green (s)     |       | 15.1  | 15.1  |       | 15.1  | 15.1  | 68.7  | 68.7  |      | 79.4  | 80.6  |      |
| Actuated g/C Ratio      |       | 0.14  | 0.14  |       | 0.14  | 0.14  | 0.65  | 0.65  |      | 0.76  | 0.77  |      |
| v/c Ratio               |       | 0.35  | 0.16  |       | 0.71  | 0.75  | 0.12  | 0.42  |      | 0.27  | 0.70  |      |
| Control Delay           |       | 44.4  | 2.4   |       | 61.7  | 62.6  | 9.6   | 9.9   |      | 3.3   | 4.7   |      |
| Queue Delay             |       | 0.0   | 0.0   |       | 0.0   | 0.0   | 0.0   | 0.0   |      | 0.0   | 0.1   |      |
| Total Delay             |       | 44.4  | 2.4   |       | 61.7  | 62.6  | 9.6   | 9.9   |      | 3.3   | 4.8   |      |
| LOS                     |       | D     | A     |       | E     | E     | A     | A     |      | A     | A     |      |
| Approach Delay          |       | 26.2  |       |       | 62.2  |       |       | 9.9   |      |       | 4.6   |      |
| Approach LOS            |       | C     |       |       | E     |       |       | A     |      |       | A     |      |
| Queue Length 50th (ft)  |       | 38    | 0     |       | 89    | 106   | 9     | 142   |      | 1     | 12    |      |

# 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road Concept B Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 74                                                                                | 6                                                                                 |                                                                                   | 130                                                                               | 149                                                                               | 27                                                                                 | 220                                                                                 |                                                                                     | 22                                                                                  | 119                                                                                 |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 17                                                                                |                                                                                   |                                                                                   | 419                                                                               |                                                                                   |                                                                                    | 455                                                                                 |                                                                                     |                                                                                     | 213                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 75                                                                                | 200                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 238                                                                               | 375                                                                               |                                                                                   | 257                                                                               | 291                                                                               | 320                                                                                | 2216                                                                                |                                                                                     | 437                                                                                 | 1373                                                                                |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 33                                                                                  |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.26                                                                              | 0.13                                                                              |                                                                                   | 0.54                                                                              | 0.56                                                                              | 0.12                                                                               | 0.42                                                                                |                                                                                     | 0.26                                                                                | 0.72                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 105

Actuated Cycle Length: 105

Offset: 18 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 14.7

Intersection LOS: B

Intersection Capacity Utilization 86.3%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road

|                                                                                            |                                                                                           |                                                                                          |
|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1      |  Ø2 (R) |  Ø4  |
| 14 s                                                                                       | 67 s                                                                                      | 24 s                                                                                     |
|  Ø6 (R) |                                                                                           |  Ø8 |
| 81 s                                                                                       |                                                                                           | 24 s                                                                                     |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Improved Concept B Lanes, Volumes, Timings

Timing Plan: Saturday Midday

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (vph)    | 86                                                                                | 679                                                                               | 171                                                                               | 142                                                                               | 657                                                                               | 160                                                                               | 233                                                                                | 210                                                                                 | 157                                                                                 | 241                                                                                 | 275                                                                                 | 61                                                                                  |
| Future Volume (vph)     | 86                                                                                | 679                                                                               | 171                                                                               | 142                                                                               | 657                                                                               | 160                                                                               | 233                                                                                | 210                                                                                 | 157                                                                                 | 241                                                                                 | 275                                                                                 | 61                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 11                                                                                | 11                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                 | 11                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 200                                                                               |                                                                                   | 325                                                                               | 200                                                                               |                                                                                   | 0                                                                                 | 400                                                                                |                                                                                     | 75                                                                                  | 170                                                                                 |                                                                                     | 75                                                                                  |
| Storage Lanes           | 1                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                  |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)       | 85                                                                                |                                                                                   |                                                                                   | 50                                                                                |                                                                                   |                                                                                   | 100                                                                                |                                                                                     |                                                                                     | 100                                                                                 |                                                                                     |                                                                                     |
| Lane Util. Factor       | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.970                                                                             |                                                                                   |                                                                                   | 0.971                                                                             |                                                                                   |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                              |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1711                                                                              | 3319                                                                              | 0                                                                                 | 1711                                                                              | 3437                                                                              | 0                                                                                 | 1711                                                                               | 1801                                                                                | 1583                                                                                | 1770                                                                                | 1863                                                                                | 1583                                                                                |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.325                                                                              |                                                                                     |                                                                                     | 0.411                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 1711                                                                              | 3319                                                                              | 0                                                                                 | 1711                                                                              | 3437                                                                              | 0                                                                                 | 585                                                                                | 1801                                                                                | 1583                                                                                | 766                                                                                 | 1863                                                                                | 1583                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | No                                                                                  |
| Satd. Flow (RTOR)       |                                                                                   | 21                                                                                |                                                                                   |                                                                                   | 21                                                                                |                                                                                   |                                                                                    |                                                                                     | 125                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 30                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 628                                                                               |                                                                                   |                                                                                   | 408                                                                               |                                                                                   |                                                                                    | 637                                                                                 |                                                                                     |                                                                                     | 355                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 14.3                                                                              |                                                                                   |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                    | 14.5                                                                                |                                                                                     |                                                                                     | 9.7                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.90                                                                               | 0.90                                                                                | 0.90                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                |
| Adj. Flow (vph)         | 96                                                                                | 754                                                                               | 190                                                                               | 156                                                                               | 722                                                                               | 176                                                                               | 259                                                                                | 233                                                                                 | 174                                                                                 | 274                                                                                 | 313                                                                                 | 69                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 96                                                                                | 944                                                                               | 0                                                                                 | 156                                                                               | 898                                                                               | 0                                                                                 | 259                                                                                | 233                                                                                 | 174                                                                                 | 274                                                                                 | 313                                                                                 | 69                                                                                  |
| Turn Type               | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | NA                                                                                |                                                                                   | pm+pt                                                                              | NA                                                                                  | Perm                                                                                | pm+pt                                                                               | NA                                                                                  | Perm                                                                                |
| Protected Phases        | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 7                                                                                  | 4                                                                                   |                                                                                     | 3                                                                                   | 8                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 4                                                                                  |                                                                                     | 4                                                                                   | 8                                                                                   |                                                                                     | 8                                                                                   |
| Detector Phase          | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 |                                                                                   | 7                                                                                  | 4                                                                                   | 4                                                                                   | 3                                                                                   | 8                                                                                   | 8                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 15.0                                                                              |                                                                                   | 5.0                                                                               | 15.0                                                                              |                                                                                   | 5.0                                                                                | 10.0                                                                                | 10.0                                                                                | 5.0                                                                                 | 10.0                                                                                | 10.0                                                                                |
| Minimum Split (s)       | 9.7                                                                               | 21.6                                                                              |                                                                                   | 9.7                                                                               | 21.6                                                                              |                                                                                   | 9.3                                                                                | 16.8                                                                                | 16.8                                                                                | 9.3                                                                                 | 16.8                                                                                | 16.8                                                                                |
| Total Split (s)         | 14.0                                                                              | 43.9                                                                              |                                                                                   | 17.9                                                                              | 47.8                                                                              |                                                                                   | 18.0                                                                               | 30.5                                                                                | 30.5                                                                                | 19.7                                                                                | 32.2                                                                                | 32.2                                                                                |
| Total Split (%)         | 9.7%                                                                              | 30.3%                                                                             |                                                                                   | 12.3%                                                                             | 33.0%                                                                             |                                                                                   | 12.4%                                                                              | 21.0%                                                                               | 21.0%                                                                               | 13.6%                                                                               | 22.2%                                                                               | 22.2%                                                                               |
| Yellow Time (s)         | 3.0                                                                               | 4.1                                                                               |                                                                                   | 3.0                                                                               | 4.1                                                                               |                                                                                   | 3.3                                                                                | 4.4                                                                                 | 4.4                                                                                 | 3.3                                                                                 | 4.4                                                                                 | 4.4                                                                                 |
| All-Red Time (s)        | 1.7                                                                               | 2.5                                                                               |                                                                                   | 1.7                                                                               | 2.5                                                                               |                                                                                   | 1.0                                                                                | 2.4                                                                                 | 2.4                                                                                 | 1.0                                                                                 | 2.4                                                                                 | 2.4                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 4.7                                                                               | 6.6                                                                               |                                                                                   | 4.7                                                                               | 6.6                                                                               |                                                                                   | 4.3                                                                                | 6.8                                                                                 | 6.8                                                                                 | 4.3                                                                                 | 6.8                                                                                 | 6.8                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                               | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode             | None                                                                              | Min                                                                               |                                                                                   | None                                                                              | Min                                                                               |                                                                                   | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Act Effct Green (s)     | 9.3                                                                               | 37.3                                                                              |                                                                                   | 13.2                                                                              | 41.2                                                                              |                                                                                   | 38.8                                                                               | 22.6                                                                                | 22.6                                                                                | 42.2                                                                                | 24.3                                                                                | 24.3                                                                                |
| Actuated g/C Ratio      | 0.08                                                                              | 0.34                                                                              |                                                                                   | 0.12                                                                              | 0.37                                                                              |                                                                                   | 0.35                                                                               | 0.20                                                                                | 0.20                                                                                | 0.38                                                                                | 0.22                                                                                | 0.22                                                                                |
| v/c Ratio               | 0.67                                                                              | 0.84                                                                              |                                                                                   | 0.77                                                                              | 0.70                                                                              |                                                                                   | 0.75                                                                               | 0.63                                                                                | 0.41                                                                                | 0.64                                                                                | 0.77                                                                                | 0.20                                                                                |
| Control Delay           | 73.1                                                                              | 41.2                                                                              |                                                                                   | 72.6                                                                              | 32.5                                                                              |                                                                                   | 39.5                                                                               | 49.0                                                                                | 15.6                                                                                | 31.0                                                                                | 54.2                                                                                | 36.9                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             | 73.1                                                                              | 41.2                                                                              |                                                                                   | 72.6                                                                              | 32.5                                                                              |                                                                                   | 39.5                                                                               | 49.0                                                                                | 15.6                                                                                | 31.0                                                                                | 54.2                                                                                | 36.9                                                                                |
| LOS                     | E                                                                                 | D                                                                                 |                                                                                   | E                                                                                 | C                                                                                 |                                                                                   | D                                                                                  | D                                                                                   | B                                                                                   | C                                                                                   | D                                                                                   | D                                                                                   |
| Approach Delay          |                                                                                   | 44.2                                                                              |                                                                                   |                                                                                   | 38.4                                                                              |                                                                                   |                                                                                    | 36.6                                                                                |                                                                                     |                                                                                     | 42.7                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Queue Length 50th (ft)  | 68                                                                                | 323                                                                               |                                                                                   | 111                                                                               | 280                                                                               |                                                                                   | 127                                                                                | 153                                                                                 | 29                                                                                  | 135                                                                                 | 211                                                                                 | 40                                                                                  |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Improved Concept B Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |      |
|-------------------------|------|
| Lane Group              | Ø9   |
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 9    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 33.0 |
| Total Split (s)         | 33.0 |
| Total Split (%)         | 23%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |

# 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike) Improved Concept B Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  | #146                                                                              | 408                                                                               |                                                                                   | #216                                                                              | 355                                                                               |                                                                                   | #215                                                                               | 238                                                                                 | 91                                                                                  | 200                                                                                 | 304                                                                                 | 78                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 548                                                                               |                                                                                   |                                                                                   | 328                                                                               |                                                                                   |                                                                                    | 557                                                                                 |                                                                                     |                                                                                     | 275                                                                                 |                                                                                     |
| Turn Bay Length (ft)    | 200                                                                               |                                                                                   |                                                                                   | 200                                                                               |                                                                                   |                                                                                   | 400                                                                                |                                                                                     | 75                                                                                  | 170                                                                                 |                                                                                     | 75                                                                                  |
| Base Capacity (vph)     | 143                                                                               | 1130                                                                              |                                                                                   | 203                                                                               | 1290                                                                              |                                                                                   | 344                                                                                | 385                                                                                 | 436                                                                                 | 431                                                                                 | 426                                                                                 | 362                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       | 0.67                                                                              | 0.84                                                                              |                                                                                   | 0.77                                                                              | 0.70                                                                              |                                                                                   | 0.75                                                                               | 0.61                                                                                | 0.40                                                                                | 0.64                                                                                | 0.73                                                                                | 0.19                                                                                |

## Intersection Summary

Area Type: Other

Cycle Length: 145

Actuated Cycle Length: 110.9

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 40.6

Intersection LOS: D

Intersection Capacity Utilization 78.1%

ICU Level of Service D

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)

|                                                                                        |                                                                                        |                                                                                        |                                                                                          |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø9 |  Ø3 |  Ø4 |
| 17.9 s                                                                                 | 43.9 s                                                                                 | 33 s                                                                                   | 19.7 s                                                                                   | 30.5 s                                                                                   |
|  Ø5 |  Ø6 |                                                                                        |  Ø7 |  Ø8 |
| 14 s                                                                                   | 47.8 s                                                                                 |                                                                                        | 18 s                                                                                     | 32.2 s                                                                                   |



|                         |    |
|-------------------------|----|
| Lane Group              | Ø9 |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & 2040-50 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Saturday Midday

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |  |
| Traffic Volume (vph)    | 94                                                                                | 795                                                                               | 48                                                                                | 80                                                                                | 755                                                                               | 95                                                                                | 171                                                                                | 23                                                                                  | 135                                                                                 | 78                                                                                  | 20                                                                                  | 41                                                                                  |
| Future Volume (vph)     | 94                                                                                | 795                                                                               | 48                                                                                | 80                                                                                | 755                                                                               | 95                                                                                | 171                                                                                | 23                                                                                  | 135                                                                                 | 78                                                                                  | 20                                                                                  | 41                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                 | 13                                                                                  | 13                                                                                  | 12                                                                                  | 13                                                                                  | 13                                                                                  |
| Storage Length (ft)     | 0                                                                                 |                                                                                   | 0                                                                                 | 325                                                                               |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 25                                                                                  | 0                                                                                   |                                                                                     | 25                                                                                  |
| Storage Lanes           | 0                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 1                                                                                   | 0                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)       | 50                                                                                |                                                                                   |                                                                                   | 50                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.992                                                                             |                                                                                   |                                                                                   | 0.985                                                                             |                                                                                   |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected           |                                                                                   | 0.995                                                                             |                                                                                   |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                    | 0.958                                                                               |                                                                                     |                                                                                     | 0.962                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3377                                                                              | 0                                                                                 | 0                                                                                 | 3356                                                                              | 0                                                                                 | 0                                                                                  | 1844                                                                                | 1636                                                                                | 0                                                                                   | 1852                                                                                | 1636                                                                                |
| Flt Permitted           |                                                                                   | 0.659                                                                             |                                                                                   |                                                                                   | 0.752                                                                             |                                                                                   |                                                                                    | 0.651                                                                               |                                                                                     |                                                                                     | 0.594                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 2237                                                                              | 0                                                                                 | 0                                                                                 | 2534                                                                              | 0                                                                                 | 0                                                                                  | 1253                                                                                | 1636                                                                                | 0                                                                                   | 1143                                                                                | 1636                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                    |                                                                                     | 131                                                                                 |                                                                                     |                                                                                     | 131                                                                                 |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 401                                                                               |                                                                                   |                                                                                   | 502                                                                               |                                                                                   |                                                                                    | 123                                                                                 |                                                                                     |                                                                                     | 137                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.1                                                                               |                                                                                   |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                    | 3.4                                                                                 |                                                                                     |                                                                                     | 3.7                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.81                                                                                | 0.81                                                                                | 0.81                                                                                |
| Adj. Flow (vph)         | 98                                                                                | 828                                                                               | 50                                                                                | 84                                                                                | 795                                                                               | 100                                                                               | 186                                                                                | 25                                                                                  | 147                                                                                 | 96                                                                                  | 25                                                                                  | 51                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 976                                                                               | 0                                                                                 | 0                                                                                 | 979                                                                               | 0                                                                                 | 0                                                                                  | 211                                                                                 | 147                                                                                 | 0                                                                                   | 121                                                                                 | 51                                                                                  |
| Turn Type               | pm+pt                                                                             | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                               | NA                                                                                  | Perm                                                                                | Perm                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases        | 1                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                  |                                                                                     | 4                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   |
| Detector Phase          | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                  | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0                                                                                | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 | 7.0                                                                                 |
| Minimum Split (s)       | 9.0                                                                               | 20.8                                                                              |                                                                                   | 20.8                                                                              | 20.8                                                                              |                                                                                   | 11.0                                                                               | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                | 11.0                                                                                |
| Total Split (s)         | 9.0                                                                               | 49.0                                                                              |                                                                                   | 40.0                                                                              | 40.0                                                                              |                                                                                   | 19.0                                                                               | 19.0                                                                                | 19.0                                                                                | 19.0                                                                                | 19.0                                                                                | 19.0                                                                                |
| Total Split (%)         | 10.0%                                                                             | 54.4%                                                                             |                                                                                   | 44.4%                                                                             | 44.4%                                                                             |                                                                                   | 21.1%                                                                              | 21.1%                                                                               | 21.1%                                                                               | 21.1%                                                                               | 21.1%                                                                               | 21.1%                                                                               |
| Yellow Time (s)         | 3.0                                                                               | 4.3                                                                               |                                                                                   | 4.3                                                                               | 4.3                                                                               |                                                                                   | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| All-Red Time (s)        | 1.0                                                                               | 1.5                                                                               |                                                                                   | 1.5                                                                               | 1.5                                                                               |                                                                                   | 1.0                                                                                | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     |                                                                                   | 5.8                                                                               |                                                                                   |                                                                                   | 5.8                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 | 4.0                                                                                 |                                                                                     | 4.0                                                                                 | 4.0                                                                                 |
| Lead/Lag                | Lead                                                                              |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               |                                                                                   | Lag                                                                                | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode             | Min                                                                               | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Act Effct Green (s)     |                                                                                   | 54.5                                                                              |                                                                                   |                                                                                   | 45.0                                                                              |                                                                                   |                                                                                    | 25.7                                                                                | 25.7                                                                                |                                                                                     | 25.7                                                                                | 25.7                                                                                |
| Actuated g/C Ratio      |                                                                                   | 0.61                                                                              |                                                                                   |                                                                                   | 0.50                                                                              |                                                                                   |                                                                                    | 0.29                                                                                | 0.29                                                                                |                                                                                     | 0.29                                                                                | 0.29                                                                                |
| v/c Ratio               |                                                                                   | 0.70                                                                              |                                                                                   |                                                                                   | 0.77                                                                              |                                                                                   |                                                                                    | 0.59                                                                                | 0.26                                                                                |                                                                                     | 0.37                                                                                | 0.09                                                                                |
| Control Delay           |                                                                                   | 14.6                                                                              |                                                                                   |                                                                                   | 13.5                                                                              |                                                                                   |                                                                                    | 35.3                                                                                | 7.1                                                                                 |                                                                                     | 29.5                                                                                | 0.3                                                                                 |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay             |                                                                                   | 14.6                                                                              |                                                                                   |                                                                                   | 13.5                                                                              |                                                                                   |                                                                                    | 35.3                                                                                | 7.1                                                                                 |                                                                                     | 29.5                                                                                | 0.3                                                                                 |
| LOS                     |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | D                                                                                   | A                                                                                   |                                                                                     | C                                                                                   | A                                                                                   |
| Approach Delay          |                                                                                   | 14.6                                                                              |                                                                                   |                                                                                   | 13.5                                                                              |                                                                                   |                                                                                    | 23.8                                                                                |                                                                                     |                                                                                     | 20.8                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 143                                                                               |                                                                                   |                                                                                   | 67                                                                                |                                                                                   |                                                                                    | 104                                                                                 | 7                                                                                   |                                                                                     | 55                                                                                  | 0                                                                                   |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & 2040-50 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

| Lane Group              | Ø3   |
|-------------------------|------|
| Lane Configurations     |      |
| Traffic Volume (vph)    |      |
| Future Volume (vph)     |      |
| Ideal Flow (vphpl)      |      |
| Lane Width (ft)         |      |
| Storage Length (ft)     |      |
| Storage Lanes           |      |
| Taper Length (ft)       |      |
| Lane Util. Factor       |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       |      |
| Flt Permitted           |      |
| Satd. Flow (perm)       |      |
| Right Turn on Red       |      |
| Satd. Flow (RTOR)       |      |
| Link Speed (mph)        |      |
| Link Distance (ft)      |      |
| Travel Time (s)         |      |
| Peak Hour Factor        |      |
| Adj. Flow (vph)         |      |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   |      |
| Turn Type               |      |
| Protected Phases        | 3    |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     | 7.0  |
| Minimum Split (s)       | 22.0 |
| Total Split (s)         | 22.0 |
| Total Split (%)         | 24%  |
| Yellow Time (s)         | 4.0  |
| All-Red Time (s)        | 0.0  |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                | Lead |
| Lead-Lag Optimize?      | Yes  |
| Recall Mode             | None |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |
| LOS                     |      |
| Approach Delay          |      |
| Approach LOS            |      |
| Queue Length 50th (ft)  |      |

# 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 202                                                                               |                                                                                   |                                                                                   | m111                                                                              |                                                                                   |                                                                                    | 174                                                                                 | 49                                                                                  |                                                                                     | 90                                                                                  | 0                                                                                   |
| Internal Link Dist (ft) |                                                                                   | 321                                                                               |                                                                                   |                                                                                   | 422                                                                               |                                                                                   |                                                                                    | 43                                                                                  |                                                                                     |                                                                                     | 57                                                                                  |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |
| Base Capacity (vph)     |                                                                                   | 1404                                                                              |                                                                                   |                                                                                   | 1274                                                                              |                                                                                   |                                                                                    | 358                                                                                 | 561                                                                                 |                                                                                     | 326                                                                                 | 561                                                                                 |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       |                                                                                   | 0.70                                                                              |                                                                                   |                                                                                   | 0.77                                                                              |                                                                                   |                                                                                    | 0.59                                                                                | 0.26                                                                                |                                                                                     | 0.37                                                                                | 0.09                                                                                |

## Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 82 (91%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 15.9

Intersection LOS: B

Intersection Capacity Utilization 82.8%

ICU Level of Service E

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                            |                                                                                        |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø3 |  Ø4 |
| 9 s                                                                                        | 40 s                                                                                       | 22 s                                                                                   | 19 s                                                                                     |
|  Ø6 (R) |                                                                                            |                                                                                        |                                                                                          |
| 49 s                                                                                       |                                                                                            |                                                                                        |                                                                                          |

|                         |    |
|-------------------------|----|
| Lane Group              | Ø3 |
| Queue Length 95th (ft)  |    |
| Internal Link Dist (ft) |    |
| Turn Bay Length (ft)    |    |
| Base Capacity (vph)     |    |
| Starvation Cap Reductn  |    |
| Spillback Cap Reductn   |    |
| Storage Cap Reductn     |    |
| Reduced v/c Ratio       |    |
| Intersection Summary    |    |

# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) 2040 Improved Concept B Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |    |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (vph)    | 31                                                                                | 901                                                                               | 130                                                                               | 58                                                                                | 884                                                                               | 6                                                                                 | 122                                                                                 | 16                                                                                  | 52                                                                                  | 9                                                                                   | 1                                                                                   | 16                                                                                  |
| Future Volume (vph)     | 31                                                                                | 901                                                                               | 130                                                                               | 58                                                                                | 884                                                                               | 6                                                                                 | 122                                                                                 | 16                                                                                  | 52                                                                                  | 9                                                                                   | 1                                                                                   | 16                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                  | 10                                                                                  | 10                                                                                  | 12                                                                                  | 12                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 0                                                                                 |                                                                                   | 0                                                                                 | 175                                                                               |                                                                                   | 0                                                                                 | 75                                                                                  |                                                                                     | 250                                                                                 | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes           | 0                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                   |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 50                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.982                                                                             |                                                                                   |                                                                                   | 0.999                                                                             |                                                                                   |                                                                                     | 0.885                                                                               |                                                                                     |                                                                                     | 0.858                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.999                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3356                                                                              | 0                                                                                 | 1770                                                                              | 1799                                                                              | 0                                                                                 | 1770                                                                                | 1539                                                                                | 0                                                                                   | 1770                                                                                | 1598                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.823                                                                             |                                                                                   | 0.240                                                                             |                                                                                   |                                                                                   | 0.745                                                                               |                                                                                     |                                                                                     | 0.712                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 2765                                                                              | 0                                                                                 | 447                                                                               | 1799                                                                              | 0                                                                                 | 1388                                                                                | 1539                                                                                | 0                                                                                   | 1326                                                                                | 1598                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 37                                                                                |                                                                                   |                                                                                   | 1                                                                                 |                                                                                   |                                                                                     | 53                                                                                  |                                                                                     |                                                                                     | 18                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 502                                                                               |                                                                                   |                                                                                   | 407                                                                               |                                                                                   |                                                                                     | 405                                                                                 |                                                                                     |                                                                                     | 198                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                     | 11.0                                                                                |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                |
| Adj. Flow (vph)         | 34                                                                                | 1001                                                                              | 144                                                                               | 60                                                                                | 911                                                                               | 6                                                                                 | 124                                                                                 | 16                                                                                  | 53                                                                                  | 10                                                                                  | 1                                                                                   | 18                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 1179                                                                              | 0                                                                                 | 60                                                                                | 917                                                                               | 0                                                                                 | 124                                                                                 | 69                                                                                  | 0                                                                                   | 10                                                                                  | 19                                                                                  | 0                                                                                   |
| Turn Type               | pm+pt                                                                             | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                                | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        | 1                                                                                 | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                     | 4                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   | 4                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 3.0                                                                               | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              |                                                                                   | 7.0                                                                                 | 7.0                                                                                 |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 7.3                                                                               | 21.3                                                                              |                                                                                   | 21.3                                                                              | 21.3                                                                              |                                                                                   | 11.9                                                                                | 11.9                                                                                |                                                                                     | 11.9                                                                                | 11.9                                                                                |                                                                                     |
| Total Split (s)         | 7.3                                                                               | 67.0                                                                              |                                                                                   | 59.7                                                                              | 59.7                                                                              |                                                                                   | 23.0                                                                                | 23.0                                                                                |                                                                                     | 23.0                                                                                | 23.0                                                                                |                                                                                     |
| Total Split (%)         | 8.1%                                                                              | 74.4%                                                                             |                                                                                   | 66.3%                                                                             | 66.3%                                                                             |                                                                                   | 25.6%                                                                               | 25.6%                                                                               |                                                                                     | 25.6%                                                                               | 25.6%                                                                               |                                                                                     |
| Yellow Time (s)         | 3.3                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               |                                                                                   | 3.0                                                                                 | 3.0                                                                                 |                                                                                     | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.0                                                                               | 1.3                                                                               |                                                                                   | 1.3                                                                               | 1.3                                                                               |                                                                                   | 1.9                                                                                 | 1.9                                                                                 |                                                                                     | 1.9                                                                                 | 1.9                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 6.3                                                                               |                                                                                   | 6.3                                                                               | 6.3                                                                               |                                                                                   | 4.9                                                                                 | 4.9                                                                                 |                                                                                     | 4.9                                                                                 | 4.9                                                                                 |                                                                                     |
| Lead/Lag                | Lead                                                                              |                                                                                   |                                                                                   | Lag                                                                               | Lag                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | Max                                                                               | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                                | None                                                                                |                                                                                     | None                                                                                | None                                                                                |                                                                                     |
| Act Effct Green (s)     |                                                                                   | 66.9                                                                              |                                                                                   | 53.4                                                                              | 53.4                                                                              |                                                                                   | 11.9                                                                                | 11.9                                                                                |                                                                                     | 11.9                                                                                | 11.9                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.74                                                                              |                                                                                   | 0.59                                                                              | 0.59                                                                              |                                                                                   | 0.13                                                                                | 0.13                                                                                |                                                                                     | 0.13                                                                                | 0.13                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.56                                                                              |                                                                                   | 0.23                                                                              | 0.86                                                                              |                                                                                   | 0.68                                                                                | 0.28                                                                                |                                                                                     | 0.06                                                                                | 0.08                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 4.4                                                                               |                                                                                   | 8.8                                                                               | 16.8                                                                              |                                                                                   | 54.9                                                                                | 16.0                                                                                |                                                                                     | 32.1                                                                                | 15.1                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.2                                                                               |                                                                                   | 0.0                                                                               | 1.3                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 4.5                                                                               |                                                                                   | 8.8                                                                               | 18.1                                                                              |                                                                                   | 54.9                                                                                | 16.0                                                                                |                                                                                     | 32.1                                                                                | 15.1                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   | A                                                                                 | B                                                                                 |                                                                                   | D                                                                                   | B                                                                                   |                                                                                     | C                                                                                   | B                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 4.5                                                                               |                                                                                   |                                                                                   | 17.6                                                                              |                                                                                   |                                                                                     | 41.0                                                                                |                                                                                     |                                                                                     | 21.0                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | D                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 75                                                                                |                                                                                   | 9                                                                                 | 157                                                                               |                                                                                   | 68                                                                                  | 8                                                                                   |                                                                                     | 5                                                                                   | 1                                                                                   |                                                                                     |

# 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike) 2040 Improved Concept B Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 121                                                                               |                                                                                   | m17                                                                               | #678                                                                              |                                                                                   | 118                                                                                | 43                                                                                  |                                                                                     | 18                                                                                  | 18                                                                                  |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 422                                                                               |                                                                                   |                                                                                   | 327                                                                               |                                                                                   |                                                                                    | 325                                                                                 |                                                                                     |                                                                                     | 118                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   | 175                                                                               |                                                                                   |                                                                                   | 75                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 2112                                                                              |                                                                                   | 265                                                                               | 1067                                                                              |                                                                                   | 279                                                                                | 351                                                                                 |                                                                                     | 266                                                                                 | 335                                                                                 |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 239                                                                               |                                                                                   | 0                                                                                 | 47                                                                                |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.63                                                                              |                                                                                   | 0.23                                                                              | 0.90                                                                              |                                                                                   | 0.44                                                                               | 0.20                                                                                |                                                                                     | 0.04                                                                                | 0.06                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 81 (90%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 13.0

Intersection LOS: B

Intersection Capacity Utilization 74.6%

ICU Level of Service D

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                            |                                                                                          |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1     |  Ø2 (R) |  Ø4 |
| 7.3 s                                                                                      | 59.7 s                                                                                     | 23 s                                                                                     |
|  Ø6 (R) |                                                                                            |                                                                                          |
| 67 s                                                                                       |                                                                                            |                                                                                          |



## 108: Burroughs Road &amp; Route 58 (Black Rock Turnpike)

## 2040 Improved Concept B

## Lanes, Volumes, Timings

Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |                                                                                   |  |                                                                                   |                                                                                   |  |  |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 80                                                                                | 874                                                                               | 15                                                                                | 4                                                                                 | 861                                                                               | 112                                                                               | 20                                                                                 | 64                                                                                  | 10                                                                                  | 126                                                                                 | 52                                                                                  | 65                                                                                  |
| Future Volume (vph)     | 80                                                                                | 874                                                                               | 15                                                                                | 4                                                                                 | 861                                                                               | 112                                                                               | 20                                                                                 | 64                                                                                  | 10                                                                                  | 126                                                                                 | 52                                                                                  | 65                                                                                  |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Lane Width (ft)         | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                | 11                                                                                | 12                                                                                | 12                                                                                 | 16                                                                                  | 12                                                                                  | 12                                                                                  | 16                                                                                  | 12                                                                                  |
| Storage Length (ft)     | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 150                                                                               | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Lanes           | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 1                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (ft)       | 50                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   | 25                                                                                 |                                                                                     |                                                                                     | 50                                                                                  |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                     |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                    | 0.986                                                                               |                                                                                     |                                                                                     | 0.964                                                                               |                                                                                     |
| Flt Protected           |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 0.989                                                                               |                                                                                     |                                                                                     | 0.975                                                                               |                                                                                     |
| Satd. Flow (prot)       | 0                                                                                 | 3401                                                                              | 0                                                                                 | 0                                                                                 | 1801                                                                              | 1583                                                                              | 0                                                                                  | 2059                                                                                | 0                                                                                   | 0                                                                                   | 1984                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   | 0.701                                                                             |                                                                                   |                                                                                   | 0.996                                                                             |                                                                                   |                                                                                    | 0.885                                                                               |                                                                                     |                                                                                     | 0.788                                                                               |                                                                                     |
| Satd. Flow (perm)       | 0                                                                                 | 2393                                                                              | 0                                                                                 | 0                                                                                 | 1793                                                                              | 1583                                                                              | 0                                                                                  | 1842                                                                                | 0                                                                                   | 0                                                                                   | 1604                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 3                                                                                 |                                                                                   |                                                                                   |                                                                                   | 107                                                                               |                                                                                    | 6                                                                                   |                                                                                     |                                                                                     | 19                                                                                  |                                                                                     |
| Link Speed (mph)        |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    | 25                                                                                  |                                                                                     |                                                                                     | 25                                                                                  |                                                                                     |
| Link Distance (ft)      |                                                                                   | 407                                                                               |                                                                                   |                                                                                   | 390                                                                               |                                                                                   |                                                                                    | 466                                                                                 |                                                                                     |                                                                                     | 265                                                                                 |                                                                                     |
| Travel Time (s)         |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                   | 8.9                                                                               |                                                                                   |                                                                                    | 12.7                                                                                |                                                                                     |                                                                                     | 7.2                                                                                 |                                                                                     |
| Peak Hour Factor        | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.88                                                                               | 0.88                                                                                | 0.88                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Adj. Flow (vph)         | 87                                                                                | 950                                                                               | 16                                                                                | 4                                                                                 | 906                                                                               | 118                                                                               | 23                                                                                 | 73                                                                                  | 11                                                                                  | 135                                                                                 | 56                                                                                  | 70                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 1053                                                                              | 0                                                                                 | 0                                                                                 | 910                                                                               | 118                                                                               | 0                                                                                  | 107                                                                                 | 0                                                                                   | 0                                                                                   | 261                                                                                 | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                | Perm                                                                              | Perm                                                                               | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                    | 4                                                                                   |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |
| Permitted Phases        | 6                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   | 2                                                                                 | 4                                                                                  |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 6                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 | 2                                                                                 | 4                                                                                  | 4                                                                                   |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 15.0                                                                              | 15.0                                                                              |                                                                                   | 15.0                                                                              | 15.0                                                                              | 15.0                                                                              | 9.0                                                                                | 9.0                                                                                 |                                                                                     | 9.0                                                                                 | 9.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 20.6                                                                              | 20.6                                                                              |                                                                                   | 20.6                                                                              | 20.6                                                                              | 20.6                                                                              | 23.4                                                                               | 23.4                                                                                |                                                                                     | 14.4                                                                                | 14.4                                                                                |                                                                                     |
| Total Split (s)         | 65.0                                                                              | 65.0                                                                              |                                                                                   | 65.0                                                                              | 65.0                                                                              | 65.0                                                                              | 25.0                                                                               | 25.0                                                                                |                                                                                     | 25.0                                                                                | 25.0                                                                                |                                                                                     |
| Total Split (%)         | 72.2%                                                                             | 72.2%                                                                             |                                                                                   | 72.2%                                                                             | 72.2%                                                                             | 72.2%                                                                             | 27.8%                                                                              | 27.8%                                                                               |                                                                                     | 27.8%                                                                               | 27.8%                                                                               |                                                                                     |
| Yellow Time (s)         | 4.1                                                                               | 4.1                                                                               |                                                                                   | 4.1                                                                               | 4.1                                                                               | 4.1                                                                               | 3.1                                                                                | 3.1                                                                                 |                                                                                     | 3.1                                                                                 | 3.1                                                                                 |                                                                                     |
| All-Red Time (s)        | 1.5                                                                               | 1.5                                                                               |                                                                                   | 1.5                                                                               | 1.5                                                                               | 1.5                                                                               | 2.3                                                                                | 2.3                                                                                 |                                                                                     | 2.3                                                                                 | 2.3                                                                                 |                                                                                     |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   | 5.6                                                                               | 5.6                                                                               |                                                                                    | 5.4                                                                                 |                                                                                     |                                                                                     | 5.4                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Recall Mode             | C-Max                                                                             | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             | C-Max                                                                             | None                                                                               | None                                                                                |                                                                                     | None                                                                                | None                                                                                |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 62.3                                                                              |                                                                                   |                                                                                   | 62.3                                                                              | 62.3                                                                              |                                                                                    | 16.7                                                                                |                                                                                     |                                                                                     | 16.7                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   | 0.69                                                                              |                                                                                   |                                                                                   | 0.69                                                                              | 0.69                                                                              |                                                                                    | 0.19                                                                                |                                                                                     |                                                                                     | 0.19                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   | 0.64                                                                              |                                                                                   |                                                                                   | 0.73                                                                              | 0.10                                                                              |                                                                                    | 0.31                                                                                |                                                                                     |                                                                                     | 0.83                                                                                |                                                                                     |
| Control Delay           |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                   | 14.0                                                                              | 1.6                                                                               |                                                                                    | 31.2                                                                                |                                                                                     |                                                                                     | 54.9                                                                                |                                                                                     |
| Queue Delay             |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.3                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                   | 14.3                                                                              | 1.6                                                                               |                                                                                    | 31.2                                                                                |                                                                                     |                                                                                     | 54.9                                                                                |                                                                                     |
| LOS                     |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 | A                                                                                 |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Approach Delay          |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                   | 12.9                                                                              |                                                                                   |                                                                                    | 31.2                                                                                |                                                                                     |                                                                                     | 54.9                                                                                |                                                                                     |
| Approach LOS            |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Queue Length 50th (ft)  |                                                                                   | 95                                                                                |                                                                                   |                                                                                   | 298                                                                               | 2                                                                                 |                                                                                    | 49                                                                                  |                                                                                     |                                                                                     | 131                                                                                 |                                                                                     |

# 108: Burroughs Road & Route 58 (Black Rock Turnpike) Lanes, Volumes, Timings

2040 Improved Concept B  
Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 20                                                                                |                                                                                   |                                                                                   | 489                                                                               | 18                                                                                |                                                                                    | 91                                                                                  |                                                                                     |                                                                                     | #235                                                                                |                                                                                     |
| Internal Link Dist (ft) |                                                                                   | 327                                                                               |                                                                                   |                                                                                   | 310                                                                               |                                                                                   |                                                                                    | 386                                                                                 |                                                                                     |                                                                                     | 185                                                                                 |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 150                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 1656                                                                              |                                                                                   |                                                                                   | 1240                                                                              | 1128                                                                              |                                                                                    | 405                                                                                 |                                                                                     |                                                                                     | 364                                                                                 |                                                                                     |
| Starvation Cap Reductn  |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 56                                                                                | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio       |                                                                                   | 0.64                                                                              |                                                                                   |                                                                                   | 0.77                                                                              | 0.10                                                                              |                                                                                    | 0.26                                                                                |                                                                                     |                                                                                     | 0.72                                                                                |                                                                                     |

## Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow, Master Intersection

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 14.3

Intersection LOS: B

Intersection Capacity Utilization 106.7%

ICU Level of Service G

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)

|                                                                                            |                                                                                          |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø2 (R) |  Ø4 |
| 65 s                                                                                       | 25 s                                                                                     |
|  Ø6 (R) |  Ø8 |
| 65 s                                                                                       | 25 s                                                                                     |

201: Tunxis Hill Road & Route 58 (Tunxis Hill Cutoff)  
Lanes, Volumes, Timings

2040 Improved Concept B  
Timing Plan: Saturday MIDDAY

|                         | →     | ↘    | ↙    | ←     | ↖     | ↗     |
|-------------------------|-------|------|------|-------|-------|-------|
| Lane Group              | EBT   | EBR  | WBL  | WBT   | NBL   | NBR   |
| Lane Configurations     | ↑↑    |      |      | ↑     | ↑     | ↑     |
| Traffic Volume (vph)    | 486   | 11   | 41   | 519   | 5     | 57    |
| Future Volume (vph)     | 486   | 11   | 41   | 519   | 5     | 57    |
| Ideal Flow (vphpl)      | 1900  | 1900 | 1900 | 1900  | 1900  | 1900  |
| Lane Width (ft)         | 11    | 12   | 12   | 11    | 10    | 10    |
| Storage Length (ft)     |       | 0    | 0    |       | 0     | 50    |
| Storage Lanes           |       | 0    | 0    |       | 1     | 1     |
| Taper Length (ft)       |       |      | 25   |       | 25    |       |
| Lane Util. Factor       | 0.95  | 0.95 | 1.00 | 1.00  | 1.00  | 1.00  |
| Frt                     | 0.997 |      |      |       |       | 0.850 |
| Flt Protected           |       |      |      | 0.996 | 0.950 |       |
| Satd. Flow (prot)       | 3411  | 0    | 0    | 1793  | 1652  | 1478  |
| Flt Permitted           |       |      |      | 0.996 | 0.950 |       |
| Satd. Flow (perm)       | 3411  | 0    | 0    | 1793  | 1652  | 1478  |
| Link Speed (mph)        | 30    |      |      | 30    | 25    |       |
| Link Distance (ft)      | 1095  |      |      | 214   | 782   |       |
| Travel Time (s)         | 24.9  |      |      | 4.9   | 21.3  |       |
| Peak Hour Factor        | 0.88  | 0.88 | 0.90 | 0.90  | 0.80  | 0.80  |
| Adj. Flow (vph)         | 552   | 13   | 46   | 577   | 6     | 71    |
| Shared Lane Traffic (%) |       |      |      |       |       |       |
| Lane Group Flow (vph)   | 565   | 0    | 0    | 623   | 6     | 71    |
| Sign Control            | Free  |      |      | Free  | Stop  |       |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 56.7% ICU Level of Service B

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↑↑   |      |      | ↑    | ↑    | ↑    |
| Traffic Vol, veh/h       | 486  | 11   | 41   | 519  | 5    | 57   |
| Future Vol, veh/h        | 486  | 11   | 41   | 519  | 5    | 57   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | 0    | 50   |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 88   | 88   | 90   | 90   | 80   | 80   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 552  | 13   | 46   | 577  | 6    | 71   |

| Major/Minor          | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 0      | 0      | 565    |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Critical Hdwy        | -      | -      | 4.13   |
| Critical Hdwy Stg 1  | -      | -      | -      |
| Critical Hdwy Stg 2  | -      | -      | -      |
| Follow-up Hdwy       | -      | -      | 2.219  |
| Pot Cap-1 Maneuver   | -      | -      | 1005   |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Platoon blocked, %   | -      | -      | -      |
| Mov Cap-1 Maneuver   | -      | -      | 1005   |
| Mov Cap-2 Maneuver   | -      | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |

| Approach             | EB | WB  | NB   |
|----------------------|----|-----|------|
| HCM Control Delay, s | 0  | 0.6 | 11.9 |
| HCM LOS              |    |     | B    |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL   | WBT |
|-----------------------|-------|-------|-----|-----|-------|-----|
| Capacity (veh/h)      | 171   | 715   | -   | -   | 1005  | -   |
| HCM Lane V/C Ratio    | 0.037 | 0.1   | -   | -   | 0.045 | -   |
| HCM Control Delay (s) | 26.9  | 10.6  | -   | -   | 8.8   | 0   |
| HCM Lane LOS          | D     | B     | -   | -   | A     | A   |
| HCM 95th %tile Q(veh) | 0.1   | 0.3   | -   | -   | 0.1   | -   |

202: Route 732 (Black Rock Turnpike) & Judd Street  
Lanes, Volumes, Timings

2040 Improved Concept B  
Timing Plan: Saturday MIDDAY

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations     |  |                                                                                   |  |  |  |                                                                                   |
| Traffic Volume (vph)    | 22                                                                                | 74                                                                                | 53                                                                                | 495                                                                               | 599                                                                               | 38                                                                                |
| Future Volume (vph)     | 22                                                                                | 74                                                                                | 53                                                                                | 495                                                                               | 599                                                                               | 38                                                                                |
| Ideal Flow (vphpl)      | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              |
| Lane Width (ft)         | 16                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                | 12                                                                                |
| Storage Length (ft)     | 0                                                                                 | 0                                                                                 | 25                                                                                |                                                                                   |                                                                                   | 0                                                                                 |
| Storage Lanes           | 1                                                                                 | 0                                                                                 | 1                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |
| Taper Length (ft)       | 25                                                                                |                                                                                   | 50                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Lane Util. Factor       | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Frt                     | 0.896                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.992                                                                             |                                                                                   |
| Flt Protected           | 0.989                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (prot)       | 1871                                                                              | 0                                                                                 | 1770                                                                              | 1863                                                                              | 1848                                                                              | 0                                                                                 |
| Flt Permitted           | 0.989                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |
| Satd. Flow (perm)       | 1871                                                                              | 0                                                                                 | 1770                                                                              | 1863                                                                              | 1848                                                                              | 0                                                                                 |
| Link Speed (mph)        | 25                                                                                |                                                                                   |                                                                                   | 30                                                                                | 30                                                                                |                                                                                   |
| Link Distance (ft)      | 586                                                                               |                                                                                   |                                                                                   | 395                                                                               | 218                                                                               |                                                                                   |
| Travel Time (s)         | 16.0                                                                              |                                                                                   |                                                                                   | 9.0                                                                               | 5.0                                                                               |                                                                                   |
| Peak Hour Factor        | 0.80                                                                              | 0.80                                                                              | 0.98                                                                              | 0.98                                                                              | 0.93                                                                              | 0.93                                                                              |
| Adj. Flow (vph)         | 28                                                                                | 93                                                                                | 54                                                                                | 505                                                                               | 644                                                                               | 41                                                                                |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 121                                                                               | 0                                                                                 | 54                                                                                | 505                                                                               | 685                                                                               | 0                                                                                 |
| Sign Control            | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 52.9% ICU Level of Service A

Analysis Period (min) 15

| Intersection             |        |        |       |        |      |      |
|--------------------------|--------|--------|-------|--------|------|------|
| Int Delay, s/veh         | 2.3    |        |       |        |      |      |
| Movement                 | EBL    | EBR    | NBL   | NBT    | SBT  | SBR  |
| Lane Configurations      | ↔      |        | ↔     | ↑      | ↑    |      |
| Traffic Vol, veh/h       | 22     | 74     | 53    | 495    | 599  | 38   |
| Future Vol, veh/h        | 22     | 74     | 53    | 495    | 599  | 38   |
| Conflicting Peds, #/hr   | 0      | 0      | 0     | 0      | 0    | 0    |
| Sign Control             | Stop   | Stop   | Free  | Free   | Free | Free |
| RT Channelized           | -      | None   | -     | None   | -    | None |
| Storage Length           | 0      | -      | 25    | -      | -    | -    |
| Veh in Median Storage, # | 0      | -      | -     | 0      | 0    | -    |
| Grade, %                 | 0      | -      | -     | 0      | 0    | -    |
| Peak Hour Factor         | 80     | 80     | 98    | 98     | 93   | 93   |
| Heavy Vehicles, %        | 2      | 2      | 2     | 2      | 2    | 2    |
| Mvmt Flow                | 28     | 93     | 54    | 505    | 644  | 41   |
| Major/Minor              | Minor2 | Major1 |       | Major2 |      |      |
| Conflicting Flow All     | 1278   | 665    | 685   | 0      | -    | 0    |
| Stage 1                  | 665    | -      | -     | -      | -    | -    |
| Stage 2                  | 613    | -      | -     | -      | -    | -    |
| Critical Hdwy            | 6.42   | 6.22   | 4.12  | -      | -    | -    |
| Critical Hdwy Stg 1      | 5.42   | -      | -     | -      | -    | -    |
| Critical Hdwy Stg 2      | 5.42   | -      | -     | -      | -    | -    |
| Follow-up Hdwy           | 3.518  | 3.318  | 2.218 | -      | -    | -    |
| Pot Cap-1 Maneuver       | 183    | 460    | 908   | -      | -    | -    |
| Stage 1                  | 511    | -      | -     | -      | -    | -    |
| Stage 2                  | 541    | -      | -     | -      | -    | -    |
| Platoon blocked, %       |        |        |       | -      | -    | -    |
| Mov Cap-1 Maneuver       | 172    | 460    | 908   | -      | -    | -    |
| Mov Cap-2 Maneuver       | 172    | -      | -     | -      | -    | -    |
| Stage 1                  | 481    | -      | -     | -      | -    | -    |
| Stage 2                  | 541    | -      | -     | -      | -    | -    |
| Approach                 | EB     | NB     |       | SB     |      |      |
| HCM Control Delay, s     | 21.9   | 0.9    |       | 0      |      |      |
| HCM LOS                  | C      |        |       |        |      |      |
| Minor Lane/Major Mvmt    | NBL    | NBT    | EBLn1 | SBT    | SBR  |      |
| Capacity (veh/h)         | 908    | -      | 332   | -      | -    |      |
| HCM Lane V/C Ratio       | 0.06   | -      | 0.361 | -      | -    |      |
| HCM Control Delay (s)    | 9.2    | -      | 21.9  | -      | -    |      |
| HCM Lane LOS             | A      | -      | C     | -      | -    |      |
| HCM 95th %tile Q(veh)    | 0.2    | -      | 1.6   | -      | -    |      |

203: Moritz Place & Route 58 (Black Rock Turnpike)  
Lanes, Volumes, Timings

2040 Improved Concept B  
Timing Plan: Saturday MIDDAY

|                         | →     | ↘    | ↙    | ←    | ↖    | ↗     |
|-------------------------|-------|------|------|------|------|-------|
| Lane Group              | EBT   | EBR  | WBL  | WBT  | NBL  | NBR   |
| Lane Configurations     | ↰     |      |      | ↱    |      | ↱     |
| Traffic Volume (vph)    | 987   | 5    | 0    | 963  | 0    | 14    |
| Future Volume (vph)     | 987   | 5    | 0    | 963  | 0    | 14    |
| Ideal Flow (vphpl)      | 1900  | 1900 | 1900 | 1900 | 1900 | 1900  |
| Lane Util. Factor       | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  |
| Frt                     | 0.999 |      |      |      |      | 0.865 |
| Flt Protected           |       |      |      |      |      |       |
| Satd. Flow (prot)       | 1861  | 0    | 0    | 1863 | 0    | 1611  |
| Flt Permitted           |       |      |      |      |      |       |
| Satd. Flow (perm)       | 1861  | 0    | 0    | 1863 | 0    | 1611  |
| Link Speed (mph)        | 30    |      |      | 30   | 30   |       |
| Link Distance (ft)      | 187   |      |      | 131  | 186  |       |
| Travel Time (s)         | 4.3   |      |      | 3.0  | 4.2  |       |
| Peak Hour Factor        | 0.94  | 0.94 | 0.95 | 0.95 | 0.80 | 0.80  |
| Adj. Flow (vph)         | 1050  | 5    | 0    | 1014 | 0    | 18    |
| Shared Lane Traffic (%) |       |      |      |      |      |       |
| Lane Group Flow (vph)   | 1055  | 0    | 0    | 1014 | 0    | 18    |
| Sign Control            | Free  |      |      | Free | Stop |       |

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 62.3% ICU Level of Service B

Analysis Period (min) 15



Intersection

Int Delay, s/veh 0.2

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↔    |      |      | ↑    |      | ↗    |
| Traffic Vol, veh/h       | 987  | 5    | 0    | 963  | 0    | 14   |
| Future Vol, veh/h        | 987  | 5    | 0    | 963  | 0    | 14   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | 0    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 94   | 94   | 95   | 95   | 80   | 80   |
| Heavy Vehicles, %        | 2    | 2    | 2    | 2    | 2    | 2    |
| Mvmt Flow                | 1050 | 5    | 0    | 1014 | 0    | 18   |

| Major/Minor          | Major1 | Major2 | Minor1      |
|----------------------|--------|--------|-------------|
| Conflicting Flow All | 0      | 0      | - - - 1053  |
| Stage 1              | -      | -      | - - -       |
| Stage 2              | -      | -      | - - -       |
| Critical Hdwy        | -      | -      | - - - 6.22  |
| Critical Hdwy Stg 1  | -      | -      | - - -       |
| Critical Hdwy Stg 2  | -      | -      | - - -       |
| Follow-up Hdwy       | -      | -      | - - - 3.318 |
| Pot Cap-1 Maneuver   | -      | -      | 0 - 0 275   |
| Stage 1              | -      | -      | 0 - 0       |
| Stage 2              | -      | -      | 0 - 0       |
| Platoon blocked, %   | -      | -      | -           |
| Mov Cap-1 Maneuver   | -      | -      | - - - 275   |
| Mov Cap-2 Maneuver   | -      | -      | - - -       |
| Stage 1              | -      | -      | - - -       |
| Stage 2              | -      | -      | - - -       |

| Approach             | EB | WB | NB |
|----------------------|----|----|----|
| HCM Control Delay, s | 0  | 0  | 19 |
| HCM LOS              |    |    | C  |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h)      | 275   | -   | -   | -   |
| HCM Lane V/C Ratio    | 0.064 | -   | -   | -   |
| HCM Control Delay (s) | 19    | -   | -   | -   |
| HCM Lane LOS          | C     | -   | -   | -   |
| HCM 95th %tile Q(veh) | 0.2   | -   | -   | -   |

## BLACK ROCK TURNPIKE SAFETY STUDY

### APPENDIX E: PERMITTING MAPS

MAY 2019

## **Design, Permitting, Construction, & Cost**

Following the initiation of a project and identification of a funding source, the remaining steps to implement an improvement will involve design and construction. Based on the complexity of a project, an initial Preliminary Engineering phase may be required to conduct a more detailed engineering study and refine the concept plans and project scope. A preliminary engineering study can help establish the potential impacts to environmental and natural resources, identify potential property and utility impacts, and help refine the expected costs in current dollars rather than forecasting based on estimates reported in this Study, which are provided in current, 2018 dollars.

Once Preliminary Engineering is complete and the decision is made to move forward with a project, final design will take place to add detail to the plan, conduct a right of way acquisition process, address utility conflicts and possible relocations, and develop construction documentation to facilitate bidding and construction of the improvements. Generally, projects that are identified as having a low level of complexity can be designed within 12-18 months from initiation of the project by the Towns. As complexity grows, so does the timeframe required to design improvements. Design phases can potentially last three years or more for highly complex projects. The following sections detail the permitting and compliance issues that will need to be incorporated during the design processes followed by construction considerations and an opinion of probable construction cost for the improvements outlined in Concept A.

### **Permitting and Compliance**

The following sections detail the various permitting and compliance activities that need to be considered as the Study recommendations move into the design and implementation stages. Each section describes the purpose and need for the permitting/compliance activity as well as the locations where they need to be considered. Included are sections on Environmental Permitting, Federal Funding and Preservation Compliance, Stormwater Permitting, and CTDOT Construction and Development Permitting.

### **Environmental Permitting**

Improvement projects should assess natural resources within the project area study area including, but not limited to: 1) Threatened and Endangered Species and Critical Habitats, 2) Floodplains, and 3) Wetlands. Work proposed within these mapped resource areas would likely require obtaining permits from local, state, and federal regulatory entities. The environmental permits anticipated for the concept improvements are described in the following sections. Funding sources also play a role in which environmental permits may be required for future work.

#### *Threatened and Endangered Species and Critical Habitats*

The Threatened and Endangered Species information is available through the CTDEEP Natural Diversity Data Base (NDDB). There is one NDDB area mapped within the study area in the vicinity of the Mill River Crossing as shown in the attached NDDB map provided in Appendix C. Improvements proposed within the mapped NDDB areas will be required to coordinate with CTDEEP to determine what species may be affected by the project and any preventative or mitigative measures needed in the project design/schedule/approach. To request an NDDB state listed species review, the NDDB review request form package must be completed and submitted to CTDEEP. NDDB mapping is updated on an annual basis, so projects should be re-screened if they move forward in the future. As such, the improvements to the Black Rock Turnpike at Tahmore Drive may require a NDDB review request.

Preparation of a NDDDB form submittal is estimated to take approximately two weeks, with an estimated agency review time of one to three months.

### *Floodplains*

Floodplains are limited to the areas adjacent to and feeding the Mill River in the northern end of the study area as shown in the attached Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) maps provided in Appendix D. Improvements proposed within the mapped floodway and 100-year floodplains will be required to obtain a Flood Management Certification approval. Areas of 500-year floodplain also exist within the study area, and these will need to be considered during design and permitting. It is assumed that since the work is proposed on state roadways, that state funding would be used, and the applicant for permits would be CTDOT. Depending upon the impacts and extent of the work, this permit could be a CTDEEP Individual Flood Management Certification or CTDOT Flood Management General Certification (CTDOT applicant and minimal impacts). Based upon a review of the mapping, only the improvements to the Black Rock Turnpike at Tahmore Drive intersection may require floodplain permitting.

Preparation of a Flood Management permit package is estimated to take approximately six weeks, with an estimated agency review time of four to six months. If CTDOT is the permit applicant, there would be no municipal floodplains permits required.

### *Wetlands*

There are mapped wetlands surrounding the Mill River as described in the Floodplains section above and along smaller streams, ponds, and wet areas within the study area. To determine if a project requires a wetlands permit, wetlands must be delineated in the field by a professional soil scientist, as well as waterbodies and watercourses. For purposes of this study, concepts within mapped wetland areas, waterbodies or watercourses have been identified as having the potential for wetland permitting needs.

Based upon the review of the study area, it is expected that only the improvements to the Black Rock Turnpike and Tahmore Drive intersection may require wetlands permitting and impact to the wetlands is likely to be limited. In addition, it is unlikely that the wetlands located to the north and west of Katona Drive Extension and Burroughs Road and those located northwest of the Black Rock Turnpike and Samp Mortar Drive intersection will be impacted by the proposed improvements. Notwithstanding, the following is provided to give a general overview of wetlands permitting requirements should any wetlands be impacted by the proposed improvements.

Improvements proposed within the mapped wetland resource areas have the potential to be required to obtain an Inlands Wetlands and Watercourses permit through CTDEEP. If there are activities that alter or fill wetlands or watercourses, a United States Army Corps. of Engineers (USACE) Section 404 permit would be required. Generally, for USACE Section 404 approval, if impacts are less than 5,000 square feet (sf), then submitting a Self-Verification (SV) form to USACE would be needed. If impacts are greater than 5,000 sf and less than one acre, then a Pre-Construction Notification (PCN) would be needed. If the extent of the work within wetlands and watercourses causes greater impacts than one acre, an individual Section 404 permit would be required. Authorization would likely be through General Permit (GP) No. 18, however, if authorization under a different GP was required, then thresholds may be different than those outlined above.

In addition to the USACE Section 404 permit, a Water Quality Certification (WQC) approval under Section 401 of the Federal Clean Water Act would be needed. If authorization under GP 18 is sought, WQC approval would be granted as part of the SV approval process, if SV applies to the project. If the PCN is being sought and the project has under 0.5 acres of impact, the CTDEEP Connecticut Addendum Army Corps of Engineers General Permit State of CT (CT Addendum) would be required for the WQC. If impacts are over 0.5 acres, an individual WQC through CTDEEP would be required. If USACE Section 404 approval were through a GP other than GP 18, then Section 401 WQC thresholds may change. If a USACE Section 404 permit is needed, the CTDEEP General Permit for Water Resource Construction Activities will also apply as long as the project has under one acre of wetland and watercourse impacts.

If CTDOT is the permit applicant, there would be no municipal wetlands permits required, as CTDOT coordinates with the municipalities during the design process.

Preparation of the SV form submittal is estimated to take approximately two weeks, with no agency review time. Preparation of the PCN, General Permit for Water Resource Construction Activities permit, and/or CT Addendum packages are estimated to take approximately six weeks, with an estimated agency review time of four to six months. Preparation of Individual USACE and/or Individual WQC permit packages are estimated to take approximately twelve weeks, with an estimated agency review time of eight to twelve months.

### **Federal Funding and Preservation Compliance**

Depending upon the funding source for projects, federal and/or state-level environmental documentation would be required. If federal funding is used, and if impacts are minimal, a Categorical Exclusion (CE) would likely satisfy the federal requirements. If the project has federal funding and greater impacts are anticipated, then the preparation of an Environmental Assessment (EA) may be necessary. If state funding is involved, to satisfy Connecticut Environmental Policy Act (CEPA) state environmental documentation requirements, a Post Scoping Notice or an Environmental Impact Evaluation (EIE) would be required. As the project advances into conceptual design and additional project details are known, a determination should be made about the applicability of NEPA and CEPA and the proper class of documentation. Opportunities for streamlining the environmental documentation process should be used, if available (e.g., preparation of a combined NEPA/CEPA document).

If federal funds are used for the improvements, the project would be subject to Section 4(f) of the US Department of Transportation Act to determine if the improvements would have any impact to publicly-owned public parks, recreation areas, and wildlife or waterfowl refuges, or any publicly or privately-owned historic site listed or eligible for listing on the National Register of Historic Places. Similarly, Section 106 of the National Historic Preservation Act requires that federal agencies take into account the effects of their actions on properties listed in, or eligible for listing in, the National Register of Historic Places. A review shows that Whitewood Knoll is the only park located within the study area and there are no listed sites on the National Register of Historic Places or within the Town of Fairfield list of Historic Properties. As such, the improvements to the Black Rock Turnpike at Tunxis Hill Cutoff, Moritz Place, and Whitewood Drive may require a review for compliance with Section 4(f). As the improvements are advanced into conceptual design and additional project details are known an assessment should be undertaken to determine what documentation is required in order to comply with Section 4(f) of the US Department of Transportation Act and consultation should be conducted with the CT State Historic Preservation Office to determine if there will be any impacts to historic places.

**Stormwater Permitting**

It is unknown which concepts and segments will be constructed together, however if the soil disturbance proposed for a project is over one acre, a CTDEEP General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (Stormwater GP) would be required. With CTDOT as the applicant, this project would be classified as a locally exempt project. Any concepts that require the Stormwater GP, even if located outside of a mapped NDDB area, must also request the NDDB review and include the CTDEEP response in the stormwater permit package.

Preparation of the Stormwater GP package is estimated to take approximately six weeks. This permit filing must be submitted to CTDEEP 60 days before the start of construction if the soil disturbance area is between one (1) and twenty (20) acres. If the project's soil disturbance is greater than 20 acres, the permit should be submitted 90 days before the start of construction. CTDEEP has the 60- or 90-day timeframe to review the filing and provide any feedback to the applicant.

If CTDOT is the permit applicant, there would be no municipal stormwater permits required. If soil disturbance for the project is less than one acre, and a CTDEEP wetlands permit is required, no municipal stormwater permits would be needed.

**CTDOT Improvement Construction & Development Permitting**

In addition to the permitting for natural resources, CTDOT will require permits for developments and construction of improvements within the State right-of-way for Municipal roadway improvements and driveways to developments that are not included within the scope of a CTDOT project. The permits include encroachment permits and signal revision permits for any Municipal roadway and development driveway improvements and Office of State Traffic Administration (OSTA) permits for revisions to large developments that exceed the OSTA size limits and or those that are currently certified by OSTA. Depending on the scope of the work and the entity, the Municipality or a private developer performing the design, funding for the permits may come from public and/or private resources.

**Construction & Opinions of Probable Construction Cost**

Following the completion of the design phase, the projects will begin the construction phase. The steps involved in a publicly funded project include advertisement for bids to contractors, collecting bids on the work and awarding the contract, and finally conducting the construction to build the improvement. Utility relocations typically take place during construction, but in some instances a utility company may relocate facilities in advance of a project taking place once a utility agreement is in place. Generally, smaller projects are completed within one construction season between March and November. Larger projects can span several construction seasons depending on the complexity of the work, the construction staging and phasing needed to facilitate the maintenance and protection of traffic operations during construction, and possibly the availability of funding. Projects identified as having Moderate Complexity can be expected to take up to two construction seasons and highly complex projects could take more than two construction seasons to build.

To assist in the budgeting of funding for the improvements, opinions of preliminary probable construction costs (OPC) were developed for improvement Concept A. The preliminary costs have been estimated following the guidelines published by the CTDOT and are presented in 2019 dollars. Project costs may require inflation factors looking out into the future to determine actual funding needs for funding programming. The "Preliminary Cost Estimating Guidelines" provide unit costs and percentage based lump sum costs to facilitate the estimation of project costs at the Preliminary Engineering level of project development. The

approximate project costs presented in this Study are limited to the construction item costs and exclude costs related to rights of way actions and environmental remediation, and engineering. The estimates include contingency (25%) and incidentals (25%) in the total opinion of probable costs.

As shown in Table 11 below, the improvements outlined in Concept A are estimated to cost approximately \$23.15 Million to construct. The table also presents estimated construction costs for each intersection to allow for estimates for projects including multiple intersections. The full OPC for each intersection including items, quantities, and unit costs are provided in Appendix E.

**TABLE 11**

Opinion of Probable Construction Cost Summary – Concept A

| <b>Intersection</b> |                                                                                  | <b>Opinion of Probable Construction Cost</b> |
|---------------------|----------------------------------------------------------------------------------|----------------------------------------------|
| 1                   | Black Rock Turnpike at Tahmore Drive & Old Black Rock Turnpike                   | \$360,000                                    |
| 2                   | Black Rock Turnpike at Samp Mortar Drive                                         | \$2,273,000                                  |
| 3                   | Black Rock Turnpike at Brookside Drive and Fairfield Woods Road                  | \$2,288,000                                  |
| 4                   | Black Rock Turnpike at at Lake Hills & Black Rock Shopping Centers               | \$3,817,000                                  |
| 5                   | Black Rock Turnpike at Route 135 (Stillson Road) & Stillson Road                 | \$2,327,000                                  |
| 6                   | Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza                  | \$1,139,000                                  |
| 7                   | Black Rock Turnpike at Katona Drive & Katona Drive Extension                     | \$3,523,000                                  |
| 8                   | Black Rock Turnpike at Burroughs Road                                            | \$2,675,000                                  |
| 9                   | Black Rock Turnpike at Tunxis Hill Cutoff, Route 732, Mortiz Pl. & Whitewood Rd. | \$4,746,000                                  |
| <b>Total</b>        |                                                                                  | <b>\$23,148,000</b>                          |

Attachments: Figures

Tables

Appendix A – Overall Traffic Operations Summary Tables

Appendix B – Capacity Analysis Worksheets

Appendix C – FEMA FIRM Maps

Appendix D – NDDDB Map

Appendix E – Opinion of Probable Construction Costs by Intersection

J:\C\C5003 CT METROCOG\001 Black Rock Tpke Study\Report\_Evaluation\Final Report Memo\2018\_01-09 - BRT Final Report Memo.docx



# Natural Diversity Data Base Areas

FAIRFIELD, CT

December 2018

 State and Federal Listed Species  
& Significant Natural Communities

 Town Boundary

NOTE: This map shows general locations of State and Federal Listed Species and Significant Natural Communities. Information on listed species is collected and compiled by the Natural Diversity Data Base (NDDB) from a number of data sources. Exact locations of species have been buffered to produce the general locations. Exact locations of species and communities occur somewhere in the shaded areas, not necessarily in the center. A new mapping format is being employed that more accurately models important riparian and aquatic areas and eliminates the need for the upstream/downstream searches required in previous versions.

This map is intended for use as a preliminary screening tool for conducting a Natural Diversity Data Base Review Request. To use the map, locate the project boundaries and any additional affected areas. If the project is within a shaded area there may be a potential conflict with a listed species. For more information, complete a Request for Natural Diversity Data Base State Listed Species Review form (DEP-APP-007), and submit it to the NDDB along with the required maps and information. More detailed instructions are provided with the request form on our website.

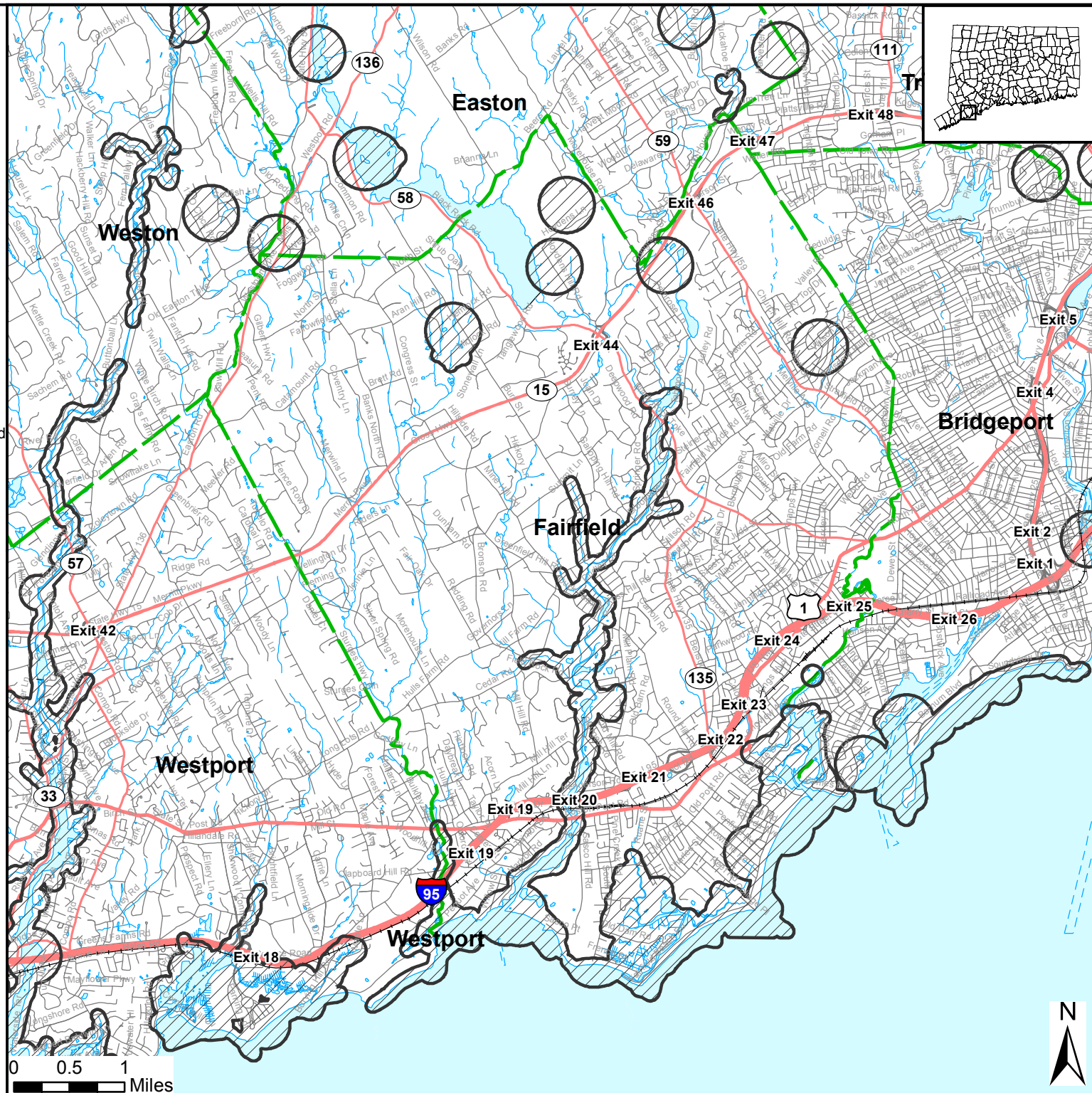
[www.ct.gov/deep/nddbrequest](http://www.ct.gov/deep/nddbrequest)

Use the CTECO Interactive Map Viewers at [www.cteco.uconn.edu](http://www.cteco.uconn.edu) to more precisely search for and locate a site and to view aerial imagery with NDDB Areas.

QUESTIONS: Department of Energy and Environmental Protection (DEEP)  
79 Elm St., Hartford CT 06106  
Phone (860) 424-3011



Connecticut Department of  
Energy & Environmental Protection  
Bureau of Natural Resources  
Wildlife Division





NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

**Coastal Base Flood Elevations** shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Connecticut State Plane (FIPS/ZONE 0600). The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services  
NOAA, NGS12  
National Geodetic Survey  
SSMC-3, #9202  
1315 East-West Highway  
Silver Spring, Maryland 20910-3182  
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov>.

**Base map** information shown on this FIRM was provided in digital format by the Connecticut Department of Environmental Protection. This information was derived from digital orthophotos produced at a scale of 1:12,000 from aerial photography flown in 2004 supplemented with aerial photography from 2005.

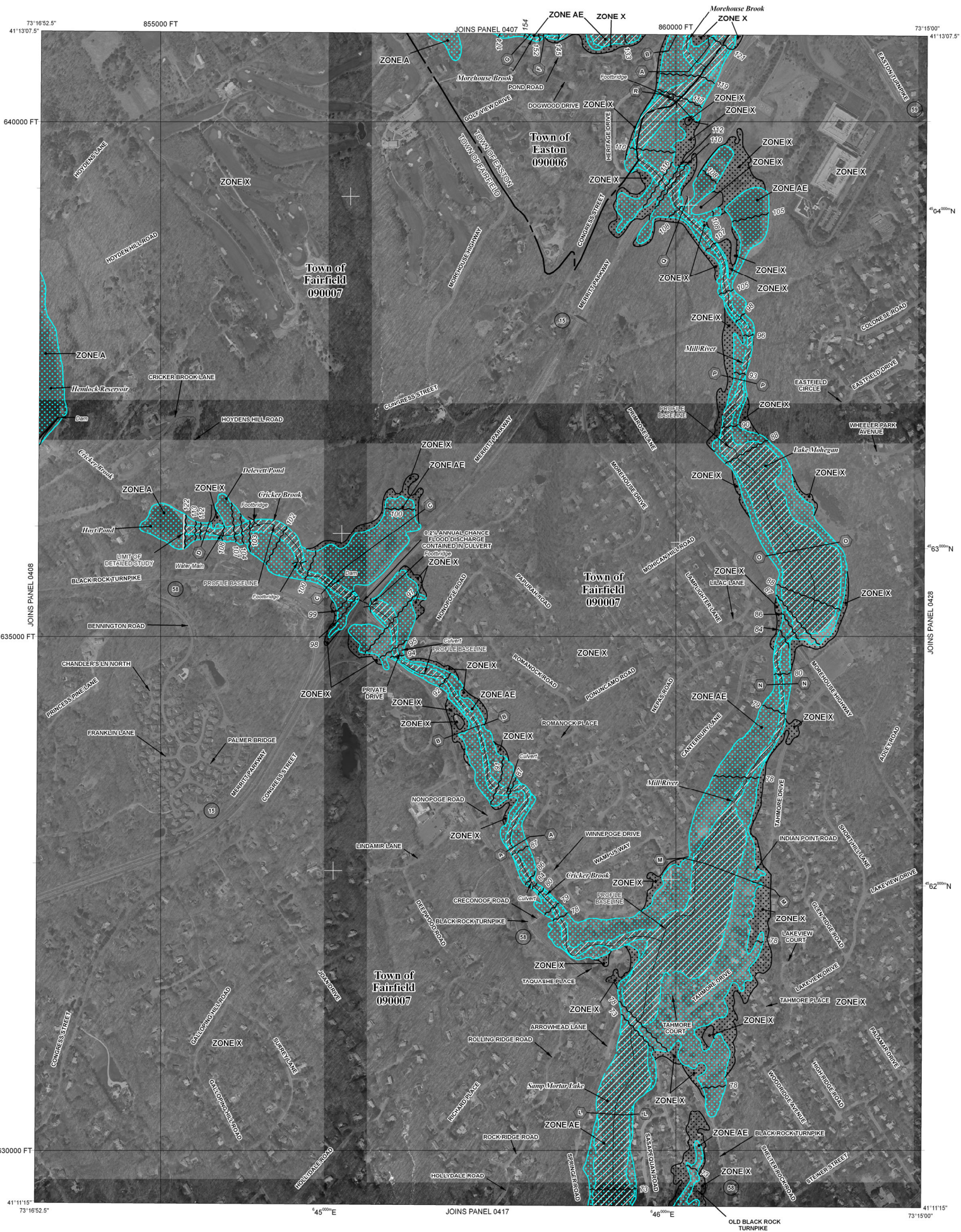
Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map. Also, the road to floodplain relationships for unreviewed streams may differ from what is shown on previous maps.

**Corporate limits** shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

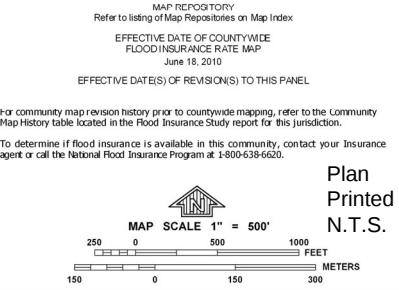
Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at <http://www.msc.fema.gov>.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov>.



LEGEND

- SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD**
- The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equal or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.
- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently dismantled. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.
- FLOODWAY AREAS IN ZONE AE**
- The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.
- OTHER FLOOD AREAS**
- ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- OTHER AREAS**
- ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D** Areas in which flood hazards are undetermined, but possible.
- COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS**
- OTHERWISE PROTECTED AREAS (OPAs)**
- CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.
- 1% annual chance floodplain boundary  
0.2% annual chance floodplain boundary  
Floodway boundary  
Zone D boundary  
CBRS and OPA boundary  
Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.  
Base Flood Elevation line and value; elevation in feet\*  
Base Flood Elevation value where uniform within zone; elevation in feet\*
- \* Referenced to the North American Vertical Datum of 1988
- Ⓐ ——— Ⓐ Cross section line  
Ⓢ ——— Ⓢ Transsect line  
87°07'45", 32°22'30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere  
1000-meter Universal Transverse Mercator grid values, zone 18  
5000-foot grid values; Connecticut State Plane coordinate system (FIPS/ZONE 0600), Lambert Conformal Conic projection  
DX5510 x Bench mark (see explanation in Notes to Users section of this FIRM panel)  
● M1.5 River Mile
- MAP REPOSITORY  
Refer to listing of Map Repositories on Map Index  
EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP  
June 18, 2010  
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
- For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.  
To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.



**NFIP** **PANEL 0409F**

**FIRM**  
FLOOD INSURANCE RATE MAP  
FAIRFIELD COUNTY,  
CONNECTICUT  
(ALL JURISDICTIONS)

**PANEL 409 OF 626**  
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

**CONTAINS:**

| COMMUNITY          | NUMBER | PANEL | SUFFIX |
|--------------------|--------|-------|--------|
| EASTON, TOWN OF    | 090006 | 0409  | F      |
| FAIRFIELD, TOWN OF | 090007 | 0409  | F      |

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

**MAP NUMBER**  
09001C0409F

**EFFECTIVE DATE**  
JUNE 18, 2010

Federal Emergency Management Agency



NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

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Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Connecticut State Plane (FIPSZONE 0600). The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services  
NOAA, NNGS12  
National Geodetic Survey  
SSMC-3, #9202  
1315 East-West Highway  
Silver Spring, Maryland 20910-3182  
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov>.

**Base map** information shown on this FIRM was provided in digital format by the Connecticut Department of Environmental Protection. This information was derived from digital orthophotos produced at a scale of 1:12,000 from aerial photography flown in 2004 supplemented with aerial photography from 2005.

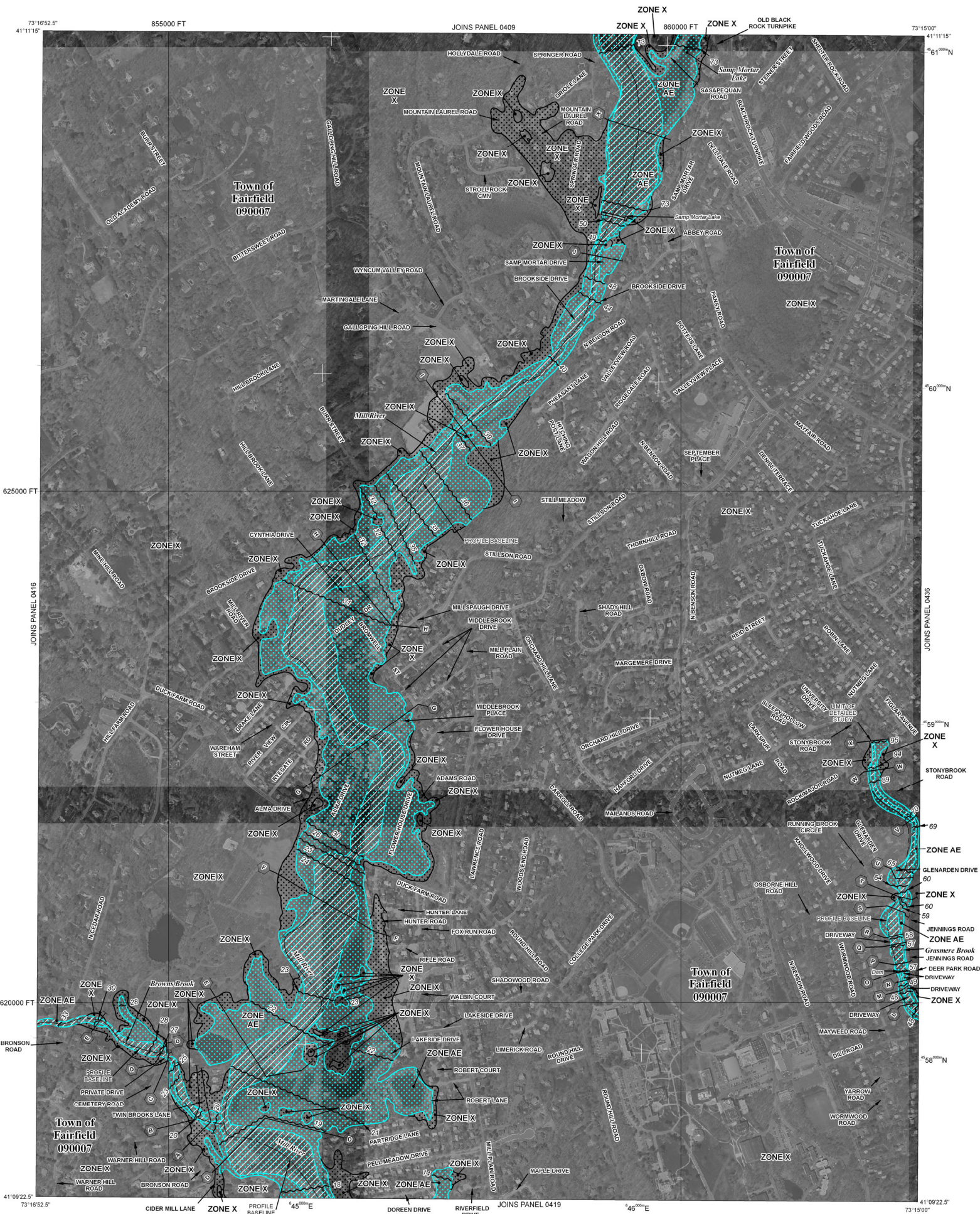
Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations** and **floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map. Also, the road to floodplain relationships for unreviewed streams may differ from what is shown on previous maps.

**Corporate limits** shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at <http://www.msc.fema.gov>.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov>.



LEGEND

**SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD**

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently dismantled. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

**FLOODWAY AREAS IN ZONE AE**

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

**OTHER FLOOD AREAS**

**ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

**OTHER AREAS**

- ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D** Areas in which flood hazards are undetermined, but possible.

**COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS**

**OTHERWISE PROTECTED AREAS (OPAs)**

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Base Flood Elevation line and value; elevation in feet\*
- Base Flood Elevation value where uniform within zone; elevation in feet\*

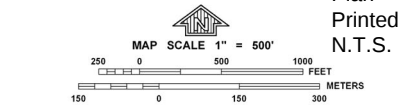
\* Referenced to the North American Vertical Datum of 1988

- DX5510 x** Cross section line
- M1.5** River Mile
- Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 1000-meter Universal Transverse Mercator grid values, zone 18
- 5000-foot grid values: Connecticut State Plane coordinate system (FIPSZONE 0600), Lambert Conformal Conic projection
- Bench mark (see explanation in Notes to Users section of this FIRM panel)

MAP REPOSITORY  
Refer to listing of Map Repositories on Map Index  
EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP  
June 18, 2010  
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.



Plan  
Printed  
N.T.S.

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0417F

**FIRM**  
FLOOD INSURANCE RATE MAP  
FAIRFIELD COUNTY,  
CONNECTICUT  
(ALL JURISDICTIONS)

PANEL 417 OF 626  
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:  
COMMUNITY FAIRFIELD, TOWN OF  
NUMBER 090007  
PANEL 0417  
SUFFIX F

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

**MAP NUMBER**  
09001C0417F  
**EFFECTIVE DATE**  
JUNE 18, 2010  
Federal Emergency Management Agency



## BLACK ROCK TURNPIKE SAFETY STUDY

# APPENDIX F: ORDER OF MAGNITUDE COST ESTIMATES

MAY 2019

**Opinion of Probable Cost for the Construction of  
Black Rock Turnpike Transportation Planning Study**

**Intersection 1 - Black Rock Turnpike at Tahmore Drive & Old Black Rock Turnpike**

| Item                                        | Unit | Quantity | Price        | Amount           |
|---------------------------------------------|------|----------|--------------|------------------|
| Earth Excavation                            | CY   | 100      | \$20.00      | \$2,000          |
| Rock Excavation                             | CY   | 0        | \$100.00     | \$0              |
| Formation of Subgrade                       | SY   | 0        | \$3.00       | \$0              |
| Subbase                                     | CY   | 0        | \$40.00      | \$0              |
| Sedimentation Control System                | LF   | 500      | \$4.00       | \$2,000          |
| HMA S1.0                                    | TN   | 0        | \$120.00     | \$0              |
| HMA S0.5                                    | TN   | 200      | \$105.00     | \$21,000         |
| Milling of Bituminous Concrete 0-4"         | SY   | 1,700    | \$5.00       | \$8,500          |
| 15" R.C. Pipe                               | LF   | 0        | \$75.00      | \$0              |
| Granite Curbing                             | LF   | 0        | \$75.00      | \$0              |
| Concrete Curbing                            | LF   | 0        | \$35.00      | \$0              |
| Granite Pavers on 8" Concrete Base Slab     | SF   | 0        | \$50.00      | \$0              |
| 8" Reinforced Concrete Base Slab for Pavers | SF   | 0        | \$15.00      | \$0              |
| Concrete Sidewalk                           | SF   | 1,500    | \$10.00      | \$15,000         |
| Concrete Sidewalk Ramp                      | EA   | 8        | \$1,250.00   | \$10,000         |
| Bituminous Concrete Driveway                | SY   | 0        | \$45.00      | \$0              |
| Concrete Driveway                           | CY   | 0        | \$700.00     | \$0              |
| Furnishing And Placing Topsoil              | SY   | 300      | \$8.00       | \$2,400          |
| Turf Establishment                          | SY   | 300      | \$2.00       | \$600            |
| Trafficperson (Municipal Police Officer)    | HR   | 800      | \$90.00      | \$72,000         |
| Utility Pole Relocation                     | EA   | 0        | \$10,000.00  | \$0              |
| Landscaping                                 | LS   | 0        | \$0.00       | \$0              |
| Type "C" Catch Basin                        | EA   | 0        | \$3,500.00   | \$0              |
| Type "CL" Catch Basin                       | EA   | 0        | \$3,500.00   | \$0              |
| Manhole                                     | EA   | 0        | \$3,100.00   | \$0              |
| New Traffic Signal                          | LS   | 0        | \$250,000.00 | \$0              |
| Minor Signal Modification                   | LS   | 1        | \$30,000.00  | \$30,000         |
| Major Signal Modification                   | LS   | 0        | \$80,000.00  | \$0              |
| Identified Items Subtotal                   |      |          |              | \$164,000        |
| Minor Items (25%)                           |      |          |              | \$41,000         |
| <b>Items Subtotal</b>                       |      |          |              | <b>\$205,000</b> |
| <b>Lump Sum Items</b>                       |      |          |              |                  |
| Clearing and Grubbing (3%)                  |      |          |              | \$6,200          |
| M&P of Traffic (5%)                         |      |          |              | \$10,300         |
| Mobilization (7%)                           |      |          |              | \$14,400         |
| Construction Staking (2%)                   |      |          |              | \$4,100          |
| Incidentals (25%)                           |      |          |              | \$60,000         |
| Contingencies (25%)                         |      |          |              | \$60,000         |
| <b>Total</b>                                |      |          |              | <b>\$360,000</b> |

**Opinion of Probable Cost for the Construction of  
Black Rock Turnpike Transportation Planning Study  
Intersection 2 - Black Rock Turnpike at Samp Mortar Drive**

| Item                                        | Unit | Quantity | Price        | Amount             |
|---------------------------------------------|------|----------|--------------|--------------------|
| Earth Excavation                            | CY   | 500      | \$20.00      | \$10,000           |
| Rock Excavation                             | CY   | 50       | \$100.00     | \$5,000            |
| Formation of Subgrade                       | SY   | 700      | \$3.00       | \$2,100            |
| Subbase                                     | CY   | 300      | \$40.00      | \$12,000           |
| Sedimentation Control System                | LF   | 1,000    | \$4.00       | \$4,000            |
| HMA S1.0                                    | TN   | 200      | \$120.00     | \$24,000           |
| HMA S0.5                                    | TN   | 800      | \$105.00     | \$84,000           |
| Milling of Bituminous Concrete 0-4"         | SY   | 6,300    | \$5.00       | \$31,500           |
| 15" R.C. Pipe                               | LF   | 25       | \$75.00      | \$1,875            |
| Granite Curbing                             | LF   | 800      | \$75.00      | \$60,000           |
| Concrete Curbing                            | LF   | 0        | \$35.00      | \$0                |
| Granite Pavers on 8" Concrete Base Slab     | SF   | 0        | \$50.00      | \$0                |
| 8" Reinforced Concrete Base Slab for Pavers | SF   | 0        | \$15.00      | \$0                |
| Concrete Sidewalk                           | SF   | 4,400    | \$10.00      | \$44,000           |
| Concrete Sidewalk Ramp                      | EA   | 7        | \$1,250.00   | \$8,750            |
| Bituminous Concrete Driveway                | SY   | 200      | \$45.00      | \$9,000            |
| Concrete Driveway                           | CY   | 30       | \$700.00     | \$21,000           |
| Furnishing And Placing Topsoil              | SY   | 0        | \$8.00       | \$0                |
| Turf Establishment                          | SY   | 0        | \$2.00       | \$0                |
| Trafficperson (Municipal Police Officer)    | HR   | 2,800    | \$90.00      | \$252,000          |
| Utility Pole Relocation                     | EA   | 3        | \$20,000.00  | \$60,000           |
| Landscaping                                 | LS   | 0        | \$0.00       | \$0                |
| Type "C" Catch Basin                        | EA   | 1        | \$3,500.00   | \$3,500            |
| Type "CL" Catch Basin                       | EA   | 0        | \$3,500.00   | \$0                |
| Manhole                                     | EA   | 1        | \$3,100.00   | \$3,100            |
| New Traffic Signal                          | LS   | 1        | \$250,000.00 | \$250,000          |
| Minor Signal Modification                   | LS   | 0        | \$30,000.00  | \$0                |
| Major Signal Modification                   | LS   | 0        | \$80,000.00  | \$0                |
| Concrete Retaining Wall                     | SF   | 1,000    | \$150.00     | \$150,000          |
| Identified Items Subtotal                   |      |          |              | \$1,036,000        |
| Minor Items (25%)                           |      |          |              | \$259,000          |
| <b>Items Subtotal</b>                       |      |          |              | <b>\$1,295,000</b> |
| <b>Lump Sum Items</b>                       |      |          |              |                    |
| Clearing and Grubbing (3%)                  |      |          |              | \$38,900           |
| M&P of Traffic (5%)                         |      |          |              | \$64,800           |
| Mobilization (7%)                           |      |          |              | \$90,700           |
| Construction Staking (2%)                   |      |          |              | \$25,900           |
| Incidentals (25%)                           |      |          |              | \$379,000          |
| Contingencies (25%)                         |      |          |              | \$379,000          |

**Total** **\$2,273,000**

**Opinion of Probable Cost for the Construction of  
Black Rock Turnpike Transportation Planning Study**

**Intersection 3 - Black Rock Turnpike at Brookside Drive and Fairfield Woods Road**

| Item                                        | Unit | Quantity | Price        | Amount             |
|---------------------------------------------|------|----------|--------------|--------------------|
| Earth Excavation                            | CY   | 100      | \$20.00      | \$2,000            |
| Rock Excavation                             | CY   | 25       | \$100.00     | \$2,500            |
| Formation of Subgrade                       | SY   | 150      | \$3.00       | \$450              |
| Subbase                                     | CY   | 50       | \$40.00      | \$2,000            |
| Sedimentation Control System                | LF   | 0        | \$4.00       | \$0                |
| HMA S1.0                                    | TN   | 50       | \$120.00     | \$6,000            |
| HMA S0.5                                    | TN   | 800      | \$105.00     | \$84,000           |
| Milling of Bituminous Concrete 0-4"         | SY   | 6,500    | \$5.00       | \$32,500           |
| 15" R.C. Pipe                               | LF   | 0        | \$75.00      | \$0                |
| Granite Curbing                             | LF   | 200      | \$75.00      | \$15,000           |
| Concrete Curbing                            | LF   | 100      | \$35.00      | \$3,500            |
| Granite Pavers on 8" Concrete Base Slab     | SF   | 0        | \$50.00      | \$0                |
| 8" Reinforced Concrete Base Slab for Pavers | SF   | 0        | \$15.00      | \$0                |
| Concrete Sidewalk                           | SF   | 0        | \$10.00      | \$0                |
| Concrete Sidewalk Ramp                      | EA   | 0        | \$1,250.00   | \$0                |
| Bituminous Concrete Driveway                | SY   | 0        | \$45.00      | \$0                |
| Concrete Driveway                           | CY   | 160      | \$700.00     | \$112,000          |
| Furnishing And Placing Topsoil              | SY   | 100      | \$8.00       | \$800              |
| Turf Establishment                          | SY   | 100      | \$2.00       | \$200              |
| Trafficperson (Municipal Police Officer)    | HR   | 2,800    | \$90.00      | \$252,000          |
| Utility Pole Relocation                     | EA   | 1        | \$20,000.00  | \$20,000           |
| Landscaping                                 | LS   | 1        | \$10,000.00  | \$10,000           |
| Type "C" Catch Basin                        | EA   | 0        | \$3,500.00   | \$0                |
| Type "CL" Catch Basin                       | EA   | 0        | \$3,500.00   | \$0                |
| Manhole                                     | EA   | 0        | \$3,100.00   | \$0                |
| New Traffic Signal                          | LS   | 2        | \$250,000.00 | \$500,000          |
| Minor Signal Modification                   | LS   | 0        | \$30,000.00  | \$0                |
| Major Signal Modification                   | LS   | 0        | \$80,000.00  | \$0                |
| Identified Items Subtotal                   |      |          |              | \$1,043,000        |
| Minor Items (25%)                           |      |          |              | \$261,000          |
| <b>Items Subtotal</b>                       |      |          |              | <b>\$1,304,000</b> |
| <b>Lump Sum Items</b>                       |      |          |              |                    |
| Clearing and Grubbing (3%)                  |      |          |              | \$39,100           |
| M&P of Traffic (5%)                         |      |          |              | \$65,200           |
| Mobilization (7%)                           |      |          |              | \$91,300           |
| Construction Staking (2%)                   |      |          |              | \$26,100           |
| Incidentals (25%)                           |      |          |              | \$381,000          |
| Contingencies (25%)                         |      |          |              | \$381,000          |
| <b>Total</b>                                |      |          |              | <b>\$2,288,000</b> |



**Opinion of Probable Cost for the Construction of  
Black Rock Turnpike Transportation Planning Study**

**Intersection 4 - Black Rock Turnpike at at Lake Hills & Black Rock Shopping Centers**

| Item                                        | Unit | Quantity | Price        | Amount             |
|---------------------------------------------|------|----------|--------------|--------------------|
| Earth Excavation                            | CY   | 4,500    | \$20.00      | \$90,000           |
| Rock Excavation                             | CY   | 450      | \$100.00     | \$45,000           |
| Formation of Subgrade                       | SY   | 6,500    | \$3.00       | \$19,500           |
| Subbase                                     | CY   | 2,200    | \$40.00      | \$88,000           |
| Sedimentation Control System                | LF   | 600      | \$4.00       | \$2,400            |
| HMA S1.0                                    | TN   | 1,200    | \$120.00     | \$144,000          |
| HMA S0.5                                    | TN   | 1,000    | \$105.00     | \$105,000          |
| Milling of Bituminous Concrete 0-4"         | SY   | 0        | \$5.00       | \$0                |
| 15" R.C. Pipe                               | LF   | 800      | \$75.00      | \$60,000           |
| Granite Curbing                             | LF   | 2,500    | \$75.00      | \$187,500          |
| Concrete Curbing                            | LF   | 0        | \$35.00      | \$0                |
| Granite Pavers on 8" Concrete Base Slab     | SF   | 3,500    | \$50.00      | \$175,000          |
| 8" Reinforced Concrete Base Slab for Pavers | SF   | 3,500    | \$15.00      | \$52,500           |
| Concrete Sidewalk                           | SF   | 5,400    | \$10.00      | \$54,000           |
| Concrete Sidewalk Ramp                      | EA   | 14       | \$1,250.00   | \$17,500           |
| Bituminous Concrete Driveway                | SY   | 0        | \$45.00      | \$0                |
| Concrete Driveway                           | CY   | 20       | \$700.00     | \$14,000           |
| Furnishing And Placing Topsoil              | SY   | 1,000    | \$8.00       | \$8,000            |
| Turf Establishment                          | SY   | 1,000    | \$2.00       | \$2,000            |
| Trafficperson (Municipal Police Officer)    | HR   | 5,120    | \$90.00      | \$460,800          |
| Utility Pole Relocation                     | EA   | 5        | \$20,000.00  | \$100,000          |
| Landscaping                                 | LS   | 1        | \$50,000.00  | \$50,000           |
| Type "C" Catch Basin                        | EA   | 14       | \$3,500.00   | \$49,000           |
| Type "CL" Catch Basin                       | EA   | 0        | \$3,500.00   | \$0                |
| Manhole                                     | EA   | 5        | \$3,100.00   | \$15,500           |
| New Traffic Signal                          | LS   | 0        | \$250,000.00 | \$0                |
| Minor Signal Modification                   | LS   | 0        | \$30,000.00  | \$0                |
| Major Signal Modification                   | LS   | 0        | \$80,000.00  | \$0                |
| Identified Items Subtotal                   |      |          |              | \$1,740,000        |
| Minor Items (25%)                           |      |          |              | \$435,000          |
| <b>Items Subtotal</b>                       |      |          |              | <b>\$2,175,000</b> |
| <b>Lump Sum Items</b>                       |      |          |              |                    |
| Clearing and Grubbing (3%)                  |      |          |              | \$65,300           |
| M&P of Traffic (5%)                         |      |          |              | \$108,800          |
| Mobilization (7%)                           |      |          |              | \$152,300          |
| Construction Staking (2%)                   |      |          |              | \$43,500           |
| Incidentals (25%)                           |      |          |              | \$636,000          |
| Contingencies (25%)                         |      |          |              | \$636,000          |
| <b>Total</b>                                |      |          |              | <b>\$3,817,000</b> |

**Opinion of Probable Cost for the Construction of  
Black Rock Turnpike Transportation Planning Study**

**Intersection 5 - Black Rock Turnpike at Route 135 (Stillson Road) & Stillson Road**

| Item                                        | Unit | Quantity | Price        | Amount             |
|---------------------------------------------|------|----------|--------------|--------------------|
| Earth Excavation                            | CY   | 300      | \$20.00      | \$6,000            |
| Rock Excavation                             | CY   | 30       | \$100.00     | \$3,000            |
| Formation of Subgrade                       | SY   | 500      | \$3.00       | \$1,500            |
| Subbase                                     | CY   | 200      | \$40.00      | \$8,000            |
| Sedimentation Control System                | LF   | 300      | \$4.00       | \$1,200            |
| HMA S1.0                                    | TN   | 100      | \$120.00     | \$12,000           |
| HMA S0.5                                    | TN   | 1,300    | \$105.00     | \$136,500          |
| Milling of Bituminous Concrete 0-4"         | SY   | 10,600   | \$5.00       | \$53,000           |
| 15" R.C. Pipe                               | LF   | 25       | \$75.00      | \$1,875            |
| Granite Curbing                             | LF   | 0        | \$75.00      | \$0                |
| Concrete Curbing                            | LF   | 400      | \$35.00      | \$14,000           |
| Granite Pavers on 8" Concrete Base Slab     | SF   | 1,900    | \$50.00      | \$95,000           |
| 8" Reinforced Concrete Base Slab for Pavers | SF   | 1,900    | \$15.00      | \$28,500           |
| Concrete Sidewalk                           | SF   | 1,800    | \$10.00      | \$18,000           |
| Concrete Sidewalk Ramp                      | EA   | 8        | \$1,250.00   | \$10,000           |
| Bituminous Concrete Driveway                | SY   | 0        | \$45.00      | \$0                |
| Concrete Driveway                           | CY   | 120      | \$700.00     | \$84,000           |
| Furnishing And Placing Topsoil              | SY   | 0        | \$8.00       | \$0                |
| Turf Establishment                          | SY   | 0        | \$2.00       | \$0                |
| Trafficperson (Municipal Police Officer)    | HR   | 2,800    | \$90.00      | \$252,000          |
| Utility Pole Relocation                     | EA   | 4        | \$20,000.00  | \$80,000           |
| Landscaping                                 | LS   | 0        | \$0.00       | \$0                |
| Type "C" Catch Basin                        | EA   | 1        | \$3,500.00   | \$3,500            |
| Type "CL" Catch Basin                       | EA   | 0        | \$3,500.00   | \$0                |
| Manhole                                     | EA   | 1        | \$3,100.00   | \$3,100            |
| New Traffic Signal                          | LS   | 1        | \$250,000.00 | \$250,000          |
| Minor Signal Modification                   | LS   | 0        | \$30,000.00  | \$0                |
| Major Signal Modification                   | LS   | 0        | \$80,000.00  | \$0                |
| Identified Items Subtotal                   |      |          |              | \$1,061,000        |
| Minor Items (25%)                           |      |          |              | \$265,000          |
| <b>Items Subtotal</b>                       |      |          |              | <b>\$1,326,000</b> |
| <b>Lump Sum Items</b>                       |      |          |              |                    |
| Clearing and Grubbing (3%)                  |      |          |              | \$39,800           |
| M&P of Traffic (5%)                         |      |          |              | \$66,300           |
| Mobilization (7%)                           |      |          |              | \$92,800           |
| Construction Staking (2%)                   |      |          |              | \$26,500           |
| Incidentals (25%)                           |      |          |              | \$388,000          |
| Contingencies (25%)                         |      |          |              | \$388,000          |

**Total**

**\$2,327,000**

**Opinion of Probable Cost for the Construction of  
Black Rock Turnpike Transportation Planning Study**

**Intersection 6 - Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza**

| Item                                        | Unit | Quantity | Price        | Amount           |
|---------------------------------------------|------|----------|--------------|------------------|
| Earth Excavation                            | CY   | 200      | \$20.00      | \$4,000          |
| Rock Excavation                             | CY   | 25       | \$100.00     | \$2,500          |
| Formation of Subgrade                       | SY   | 300      | \$3.00       | \$900            |
| Subbase                                     | CY   | 100      | \$40.00      | \$4,000          |
| Sedimentation Control System                | LF   | 0        | \$4.00       | \$0              |
| HMA S1.0                                    | TN   | 50       | \$120.00     | \$6,000          |
| HMA S0.5                                    | TN   | 600      | \$105.00     | \$63,000         |
| Milling of Bituminous Concrete 0-4"         | SY   | 3,400    | \$5.00       | \$17,000         |
| 15" R.C. Pipe                               | LF   | 0        | \$75.00      | \$0              |
| Granite Curbing                             | LF   | 300      | \$75.00      | \$22,500         |
| Concrete Curbing                            | LF   | 200      | \$35.00      | \$7,000          |
| Granite Pavers on 8" Concrete Base Slab     | SF   | 1,000    | \$50.00      | \$50,000         |
| 8" Reinforced Concrete Base Slab for Pavers | SF   | 1,000    | \$15.00      | \$15,000         |
| Concrete Sidewalk                           | SF   | 800      | \$10.00      | \$8,000          |
| Concrete Sidewalk Ramp                      | EA   | 8        | \$1,250.00   | \$10,000         |
| Bituminous Concrete Driveway                | SY   | 0        | \$45.00      | \$0              |
| Concrete Driveway                           | CY   | 40       | \$700.00     | \$28,000         |
| Furnishing And Placing Topsoil              | SY   | 100      | \$8.00       | \$800            |
| Turf Establishment                          | SY   | 100      | \$2.00       | \$200            |
| Trafficperson (Municipal Police Officer)    | HR   | 1,500    | \$90.00      | \$135,000        |
| Utility Pole Relocation                     | EA   | 2        | \$20,000.00  | \$40,000         |
| Landscaping                                 | LS   | 1        | \$5,000.00   | \$5,000          |
| Type "C" Catch Basin                        | EA   | 0        | \$3,500.00   | \$0              |
| Type "CL" Catch Basin                       | EA   | 0        | \$3,500.00   | \$0              |
| Manhole                                     | EA   | 0        | \$3,100.00   | \$0              |
| New Traffic Signal                          | LS   | 0        | \$250,000.00 | \$0              |
| Minor Signal Modification                   | LS   | 0        | \$30,000.00  | \$0              |
| Major Signal Modification                   | LS   | 0        | \$80,000.00  | \$0              |
| New HAWK Signal                             | LS   | 1        | \$100,000.00 | \$100,000        |
| Identified Items Subtotal                   |      |          |              | \$519,000        |
| Minor Items (25%)                           |      |          |              | \$130,000        |
| <b>Items Subtotal</b>                       |      |          |              | <b>\$649,000</b> |
| <b>Lump Sum Items</b>                       |      |          |              |                  |
| Clearing and Grubbing (3%)                  |      |          |              | \$19,500         |
| M&P of Traffic (5%)                         |      |          |              | \$32,500         |
| Mobilization (7%)                           |      |          |              | \$45,400         |
| Construction Staking (2%)                   |      |          |              | \$13,000         |
| Incidentals (25%)                           |      |          |              | \$190,000        |
| Contingencies (25%)                         |      |          |              | \$190,000        |

**Total** **\$1,139,000**

**Opinion of Probable Cost for the Construction of  
Black Rock Turnpike Transportation Planning Study**

**Intersection 7 - Black Rock Turnpike at Katona Drive & Katona Drive Extension**

| Item                                        | Unit | Quantity | Price        | Amount             |
|---------------------------------------------|------|----------|--------------|--------------------|
| Earth Excavation                            | CY   | 3,500    | \$20.00      | \$70,000           |
| Rock Excavation                             | CY   | 350      | \$100.00     | \$35,000           |
| Formation of Subgrade                       | SY   | 5,400    | \$3.00       | \$16,200           |
| Subbase                                     | CY   | 1,800    | \$40.00      | \$72,000           |
| Sedimentation Control System                | LF   | 600      | \$4.00       | \$2,400            |
| HMA S1.0                                    | TN   | 1,100    | \$120.00     | \$132,000          |
| HMA S0.5                                    | TN   | 900      | \$105.00     | \$94,500           |
| Milling of Bituminous Concrete 0-4"         | SY   | 0        | \$5.00       | \$0                |
| 15" R.C. Pipe                               | LF   | 300      | \$75.00      | \$22,500           |
| Granite Curbing                             | LF   | 1,800    | \$75.00      | \$135,000          |
| Concrete Curbing                            | LF   | 0        | \$35.00      | \$0                |
| Granite Pavers on 8" Concrete Base Slab     | SF   | 4,500    | \$50.00      | \$225,000          |
| 8" Reinforced Concrete Base Slab for Pavers | SF   | 4,500    | \$15.00      | \$67,500           |
| Concrete Sidewalk                           | SF   | 2,900    | \$10.00      | \$29,000           |
| Concrete Sidewalk Ramp                      | EA   | 8        | \$1,250.00   | \$10,000           |
| Bituminous Concrete Driveway                | SY   | 0        | \$45.00      | \$0                |
| Concrete Driveway                           | CY   | 60       | \$700.00     | \$42,000           |
| Furnishing And Placing Topsoil              | SY   | 800      | \$8.00       | \$6,400            |
| Turf Establishment                          | SY   | 800      | \$2.00       | \$1,600            |
| Trafficperson (Municipal Police Officer)    | HR   | 5,120    | \$90.00      | \$460,800          |
| Utility Pole Relocation                     | EA   | 4        | \$20,000.00  | \$80,000           |
| Landscaping                                 | LS   | 1        | \$50,000.00  | \$50,000           |
| Type "C" Catch Basin                        | EA   | 10       | \$3,500.00   | \$35,000           |
| Type "CL" Catch Basin                       | EA   | 0        | \$3,500.00   | \$0                |
| Manhole                                     | EA   | 6        | \$3,100.00   | \$18,600           |
| New Traffic Signal                          | LS   | 0        | \$250,000.00 | \$0                |
| Minor Signal Modification                   | LS   | 0        | \$30,000.00  | \$0                |
| Major Signal Modification                   | LS   | 0        | \$80,000.00  | \$0                |
| Identified Items Subtotal                   |      |          |              | \$1,606,000        |
| Minor Items (25%)                           |      |          |              | \$402,000          |
| <b>Items Subtotal</b>                       |      |          |              | <b>\$2,008,000</b> |
| <b>Lump Sum Items</b>                       |      |          |              |                    |
| Clearing and Grubbing (3%)                  |      |          |              | \$60,200           |
| M&P of Traffic (5%)                         |      |          |              | \$100,400          |
| Mobilization (7%)                           |      |          |              | \$140,600          |
| Construction Staking (2%)                   |      |          |              | \$40,200           |
| Incidentals (25%)                           |      |          |              | \$587,000          |
| Contingencies (25%)                         |      |          |              | \$587,000          |
| <b>Total</b>                                |      |          |              | <b>\$3,523,000</b> |

**Opinion of Probable Cost for the Construction of  
Black Rock Turnpike Transportation Planning Study  
Intersection 8 - Black Rock Turnpike at Burroughs Road**

| Item                                        | Unit | Quantity | Price        | Amount             |
|---------------------------------------------|------|----------|--------------|--------------------|
| Earth Excavation                            | CY   | 300      | \$20.00      | \$6,000            |
| Rock Excavation                             | CY   | 30       | \$100.00     | \$3,000            |
| Formation of Subgrade                       | SY   | 500      | \$3.00       | \$1,500            |
| Subbase                                     | CY   | 200      | \$40.00      | \$8,000            |
| Sedimentation Control System                | LF   | 500      | \$4.00       | \$2,000            |
| HMA S1.0                                    | TN   | 100      | \$120.00     | \$12,000           |
| HMA S0.5                                    | TN   | 600      | \$105.00     | \$63,000           |
| Milling of Bituminous Concrete 0-4"         | SY   | 4,300    | \$5.00       | \$21,500           |
| 15" R.C. Pipe                               | LF   | 0        | \$75.00      | \$0                |
| Granite Curbing                             | LF   | 0        | \$75.00      | \$0                |
| Concrete Curbing                            | LF   | 1,000    | \$35.00      | \$35,000           |
| Granite Pavers on 8" Concrete Base Slab     | SF   | 1,100    | \$50.00      | \$55,000           |
| 8" Reinforced Concrete Base Slab for Pavers | SF   | 1,100    | \$15.00      | \$16,500           |
| Concrete Sidewalk                           | SF   | 3,600    | \$10.00      | \$36,000           |
| Concrete Sidewalk Ramp                      | EA   | 8        | \$1,250.00   | \$10,000           |
| Bituminous Concrete Driveway                | SY   | 0        | \$45.00      | \$0                |
| Concrete Driveway                           | CY   | 60       | \$700.00     | \$42,000           |
| Furnishing And Placing Topsoil              | SY   | 0        | \$8.00       | \$0                |
| Turf Establishment                          | SY   | 0        | \$2.00       | \$0                |
| Trafficperson (Municipal Police Officer)    | HR   | 2,800    | \$90.00      | \$252,000          |
| Utility Pole Relocation                     | EA   | 4        | \$20,000.00  | \$80,000           |
| Landscaping                                 | LS   | 0        | \$0.00       | \$0                |
| Type "C" Catch Basin                        | EA   | 0        | \$3,500.00   | \$0                |
| Type "CL" Catch Basin                       | EA   | 0        | \$3,500.00   | \$0                |
| Manhole                                     | EA   | 0        | \$3,100.00   | \$0                |
| New Traffic Signal                          | LS   | 1        | \$250,000.00 | \$250,000          |
| Minor Signal Modification                   | LS   | 0        | \$30,000.00  | \$0                |
| Major Signal Modification                   | LS   | 0        | \$80,000.00  | \$0                |
| Retaining Wall                              | SF   | 3,250    | \$100.00     | \$325,000          |
| Identified Items Subtotal                   |      |          |              | \$1,219,000        |
| Minor Items (25%)                           |      |          |              | \$305,000          |
| <b>Items Subtotal</b>                       |      |          |              | <b>\$1,524,000</b> |
| <b>Lump Sum Items</b>                       |      |          |              |                    |
| Clearing and Grubbing (3%)                  |      |          |              | \$45,700           |
| M&P of Traffic (5%)                         |      |          |              | \$76,200           |
| Mobilization (7%)                           |      |          |              | \$106,700          |
| Construction Staking (2%)                   |      |          |              | \$30,500           |
| Incidentals (25%)                           |      |          |              | \$446,000          |
| Contingencies (25%)                         |      |          |              | \$446,000          |

**Total** **\$2,675,000**

**Opinion of Probable Cost for the Construction of  
Black Rock Turnpike Transportation Planning Study  
Intersection 9 - Black Rock Turnpike at Tunxis Hill Cutoff, Route 732, Mortiz PI & Whitewood Rd**

| Item                                        | Unit | Quantity | Price        | Amount             |
|---------------------------------------------|------|----------|--------------|--------------------|
| Earth Excavation                            | CY   | 4,700    | \$20.00      | \$94,000           |
| Rock Excavation                             | CY   | 500      | \$100.00     | \$50,000           |
| Formation of Subgrade                       | SY   | 7,300    | \$3.00       | \$21,900           |
| Subbase                                     | CY   | 2,500    | \$40.00      | \$100,000          |
| Sedimentation Control System                | LF   | 1,200    | \$4.00       | \$4,800            |
| HMA S1.0                                    | TN   | 1,200    | \$120.00     | \$144,000          |
| HMA S0.5                                    | TN   | 1,200    | \$105.00     | \$126,000          |
| Milling of Bituminous Concrete 0-4"         | SY   | 5,400    | \$5.00       | \$27,000           |
| 15" R.C. Pipe                               | LF   | 700      | \$75.00      | \$52,500           |
| Granite Curbing                             | LF   | 3,400    | \$75.00      | \$255,000          |
| Concrete Curbing                            | LF   | 0        | \$35.00      | \$0                |
| Granite Pavers on 8" Concrete Base Slab     | SF   | 5,800    | \$50.00      | \$290,000          |
| 8" Reinforced Concrete Base Slab for Pavers | SF   | 5,800    | \$15.00      | \$87,000           |
| Concrete Sidewalk                           | SF   | 12,250   | \$10.00      | \$122,500          |
| Concrete Sidewalk Ramp                      | EA   | 15       | \$1,250.00   | \$18,750           |
| Bituminous Concrete Driveway                | SY   | 0        | \$45.00      | \$0                |
| Concrete Driveway                           | CY   | 140      | \$700.00     | \$98,000           |
| Furnishing And Placing Topsoil              | SY   | 2,000    | \$8.00       | \$16,000           |
| Turf Establishment                          | SY   | 2,000    | \$2.00       | \$4,000            |
| Trafficperson (Municipal Police Officer)    | HR   | 5,120    | \$90.00      | \$460,800          |
| Utility Pole Relocation                     | EA   | 4        | \$20,000.00  | \$80,000           |
| Landscaping                                 | LS   | 1        | \$50,000.00  | \$50,000           |
| Type "C" Catch Basin                        | EA   | 12       | \$3,500.00   | \$42,000           |
| Type "CL" Catch Basin                       | EA   | 0        | \$3,500.00   | \$0                |
| Manhole                                     | EA   | 6        | \$3,100.00   | \$18,600           |
| New Traffic Signal                          | LS   | 0        | \$250,000.00 | \$0                |
| Minor Signal Modification                   | LS   | 0        | \$30,000.00  | \$0                |
| Major Signal Modification                   | LS   | 0        | \$80,000.00  | \$0                |
| Identified Items Subtotal                   |      |          |              | \$2,163,000        |
| Minor Items (25%)                           |      |          |              | \$541,000          |
| <b>Items Subtotal</b>                       |      |          |              | <b>\$2,704,000</b> |
| <b>Lump Sum Items</b>                       |      |          |              |                    |
| Clearing and Grubbing (3%)                  |      |          |              | \$81,100           |
| M&P of Traffic (5%)                         |      |          |              | \$135,200          |
| Mobilization (7%)                           |      |          |              | \$189,300          |
| Construction Staking (2%)                   |      |          |              | \$54,100           |
| Incidentals (25%)                           |      |          |              | \$791,000          |
| Contingencies (25%)                         |      |          |              | \$791,000          |
| <b>Total</b>                                |      |          |              | <b>\$4,746,000</b> |